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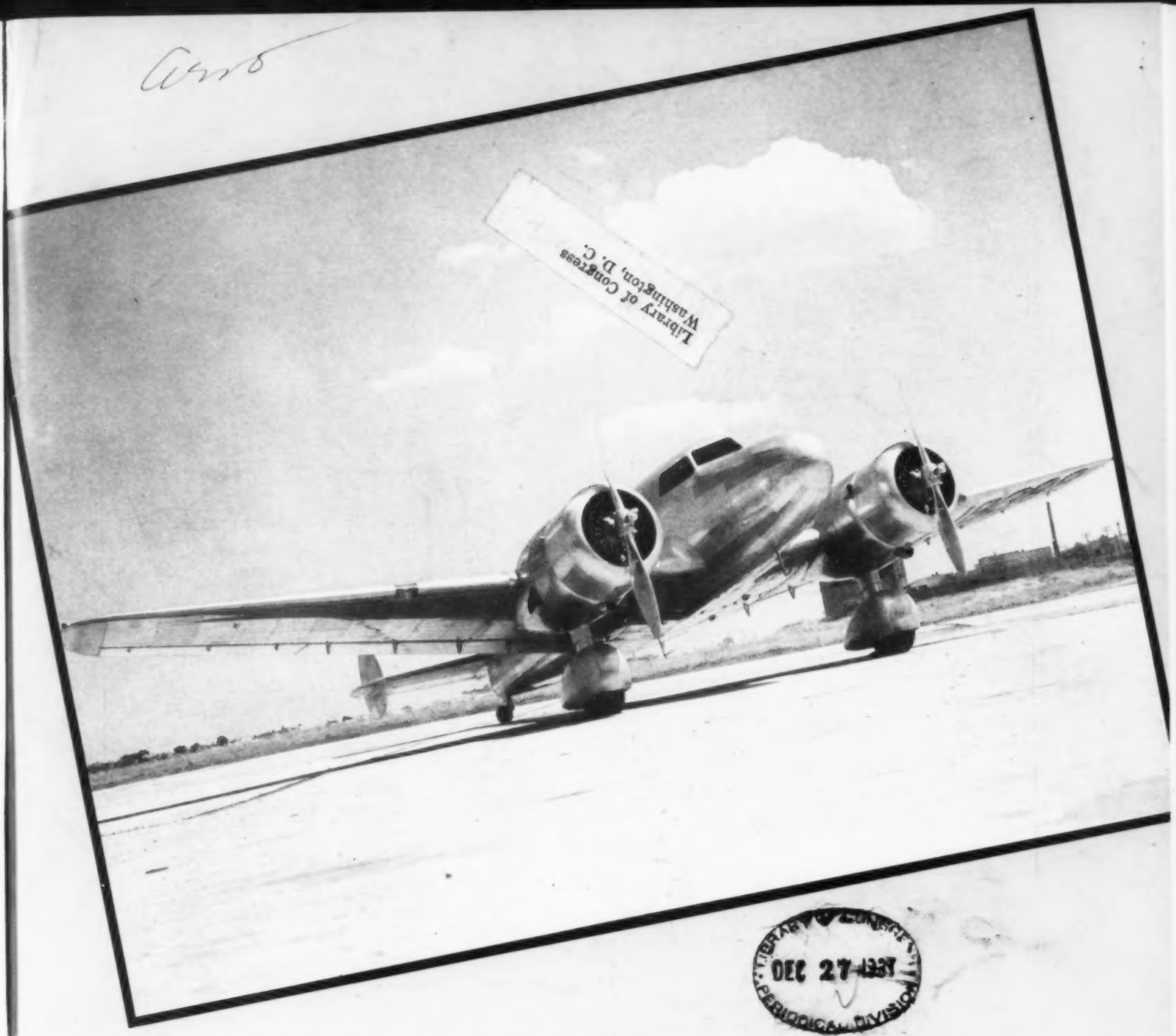

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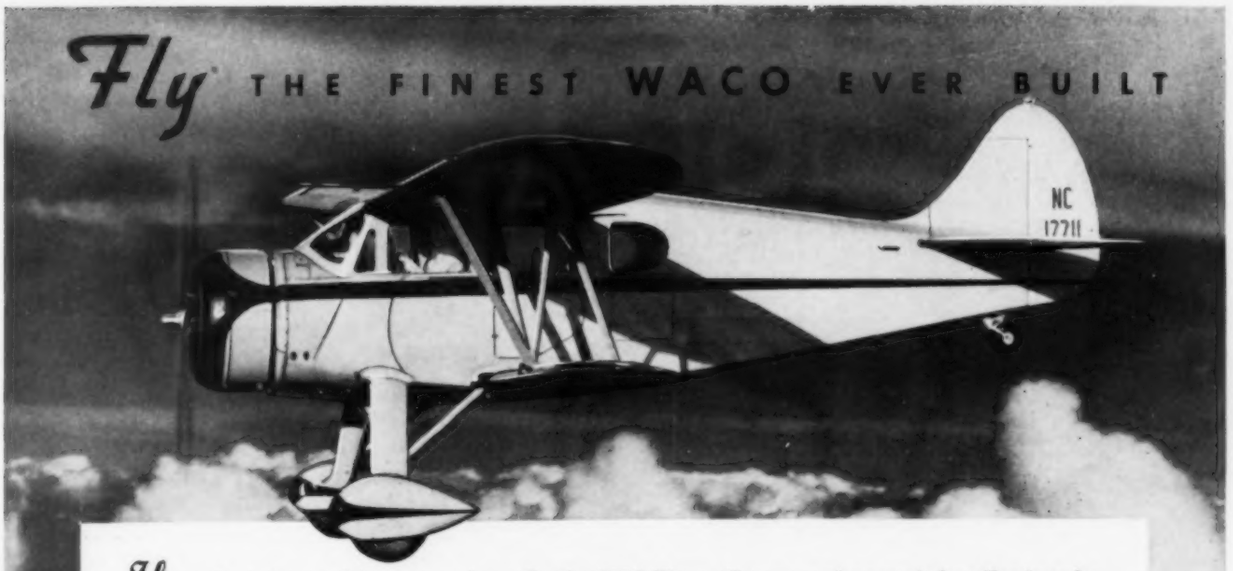

If you're interested in a new plane, fly the 1937 Waco. Compare the way it handles in take-off and in the air. Test its steep, slow glides and the soft, quick-stop landings on its new nine-foot gear. You'll agree that Waco is the logical ship for personal, business or charter service. The purchase of a Waco may be financed. Your local dealer will explain.

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Southern Flight

DECEMBER, 1937 VOL. VIII. No. 6

The complete monthly digest of aeronautics in the South and Southwest.

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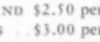


THE COVER: "Barkley-Grow Twin-engined Transport." Recently awarded an A. T. C., this new all metal airplane features a multicellular type wing construction. Powered with two Wasp Jr. SB engines the airplane cruises 216 mph at an alttiude of 9,600 ft. Accommodations are provided for six passengers and a crew of two.

★ ★ ★ ★ ★ Just Among Ourselves ★ ★ ★ ★ ★

Thoughts On Dec. 17

SOMEHOW it's a natural impulse to editorialize on the subject of the Wright Brothers and the birth of flight on Kill Devil Hill when each December rolls around. And yet, when we get down to the subject, the same old ideas come to mind about the historical and sentimental significance of December 17.

This year we are going to leave such pleasant vagaries to others, and deal mainly in positives. First of all may we wish that Grand Old Man of Aviation, Orville Wright, happiness and good health on occasion of the thirty-fourth anniversary of heavier-than-air flight at Kitty Hawk, North Carolina. What satisfaction must accrue to him when he looks back in retrospect upon all the manifold results of his genius, faith and handiwork!

Yet, on the other hand, that self-same satisfaction is surely tinged with a taste of bitterness over the fact that the original Wright model rests in England, all because of a small group of narrow, bigoted curators.

We wish that both sides of the fence could come to realize that the mass of people have forgotten all about Langley with regard to the first flight argument, and the Wright Brothers' deserved distinction is fixed firmly in the minds of all people.

We also wish that before the thirty-fifth anniversary of flight rolls around, the original Wright biplane will be brought home where it belongs. That is the predominant thought that comes to mind on aviation's anniversary of birth.

In the news columns of this issue a description will be found of the Wright Exhibit which has been set up recently in Henry Ford's unique Greenfield Village near Dearborn. The exhibit contains the original Wright home and the famous bicycle shop in which the successful biplane was constructed. The generosity of Mr. Ford coupled with that of various aviation organizations and personalities long interested in the movement, should iron out the major difficulties, especially now that a suitable haven has been provided.

Nashville Goes Berserk

THE city of Nashville is proud of her new airport, close to the city limits and far more practicable than far-away Sky Harbor at Murfreesboro. Needless to say, Nashville was in dire need of the facilities now completed; too long had the southern metropolis been off the aviation map.

But the city of Nashville might as well turn her new and modern airport into a public park so the citizens can get some use out of the heavy investment. Last month, an enterprising Nashville citizen wanted to establish an airplane sales organization and placed an order for several new demonstrators. However, the city told him he could base at the field but could not carry on demonstration work. Apparently, Nashville's new municipal airport is not a municipal proposition at all. From all appearances the field was developed for exclusive scheduled air line use.

The conception of two distinct airports for a city the size of Nashville is a good one and permits isolation of miscellaneous activity from schduled operations. However, Nashville does not contemplate doing anything about miscellaneous activity except to discourage it.

You Get Your Money's Worth

A well known aeronautical engineer brings the modern private airplane up to date and emphasizes the high degree of efficiency in new developments.*

Mac Short

THERE have been so many mechanical and aerodynamic improvements made on the private owner airplane during the past few years that private operators and prospective plane owners do not properly appreciate what they are getting in a truly modern airplane. Speed and general performance has been increased yet the operation costs have been reduced. Increased safety has been engineered into the modern airplane at every point. Details of comfort, maintenance, beauty and serviceability have been improved in countless ways.

With these thoughts in mind this article is presented as a review of the general recent progress that has made the private-owner airplane a better, more efficient and safer means of transportation.

Mac Short, Pres. of The AiRover Co.

It may be best to first state just what is meant by this private owners' airplane to which we shall frequently refer and what changes have been wrought that prompt us to consider it as being brought up to date. The private owner field may be covered by some twenty or thirty makes ranging from $1,500 for the light, forty horsepower, two-seater flyabout, to the $50,000 multi-engined, all metal airplane that resembles, and in some cases is, air transport equipment. This is a rather large spread; however, the typical private owner class which seems most generally interesting and upon which much development work has and is being done, is the class which has a counterpart in the modern passenger motor car. One cannot draw comparisons between the private airplane and automobile in the light of cost but rather their proportionate usefulness and passenger carrying capacity per mile per hour.

The urge to hold the cost down and the performance up has been distinctly evident in this class airplane. It has not been easily accomplished because the cost of saving a pound of weight or a pound of drag is more complex with the advent of new devices and gadgets. There have been various figures quoted as to the amount the airplane manufacturer will pay to save a pound of weight or drag, ranging from below ten dollars to over fifty dollars per pound. It sometimes takes Shylock's "pound to flesh" to get the pound of weight or drag out of the airplane. This limitation in an airplane is not felt as keenly or possibly is not as thoroughly appreciated in other modes of transportation. It has only recently come to the attention of the aviation industry that manufacturers of other forms of transportation equipment have begun to consider weight and drag and their effect on performance and cost. Reduction in drag is often imaginary rather than real on surface transportation as the apparent streamlining in up-to-dating equipment has been sales streamlining rather than engineering.

AERODYNAMIC DEVELOPMENTS

The modernization of the airplane has followed along two fairly definite lines of endeavor. One has been aerodynamic and the other mechanical. As the aerodynamic work more nearly approaches pure science it oftentimes has an appeal to the engineer because of this fact. Of extreme interest aerodynamically is the development of landing flaps or high lift devices for the wings in order to reduce or retain the same landing speed without generous changes in the wing arrangement. Possibly this could be put another way; these devices have been added so that the same wing area or less area could carry a greater load and land within the limits established by good flying practice and the regulations of the Bureau of Air Commerce. Wing loadings of eighteen pounds per square foot are not uncommon on private machines and by the use of suitable flaps the landing speed has been held between fifty and six miles per hour. This single development has made it possible to increase the speed range of our private airplanes from a value of $2\frac{1}{2}$ to 1 of a few years ago to $3\frac{1}{2}$ to 1 today, an increase of 40 per cent without seriously disturbing the lower limit. Wing loading no longer becomes a true index of landing speed. We are obtaining lift coefficients on the order of 1.8 and as high as 2.2 on some efficiently flapped low wing monoplanes as compared to 1.4 for earlier conventional designs. The ground effect is distinctly noticeable as landing approaches are made. The flap should not be considered as an air brake that has been added to a conventional wing to simply retard the forward speed at landing but rather as a distinct high lift device which reduces the rapid sinking speed of the flapped wing, besides increasing the drag.

Several recently developed types of flaps have shown considerable promise in materially reducing take-off runs which require attention along with the landing maneuver; in fact some authorities consider the take-off far more important than the landing. Many take-offs may be difficult but in the final analysis there are few forced landings. Experience with some flaps indicate the safe prediction that a reduction in take-off run in the order of twenty to twenty-five per cent may be expected when used in connection with a controllable pitch propeller. These same flaps incidentally indicate decreases in distance required to land over an obstacle of approximately fifty per cent over the unflapped airplane. Take-off improvements are not possible with all types of flaps as usually the resultant drag for the airplane as a flapped machine is rather high and cannot be flown at take-off speeds and through the climb, but they are all beneficial at landing.

Approach to the jump take-off has been successfully carried out on certain arplanes as an emergency maneuver. It is made posible by judicious use of effective flaps just at take-off speed and with the airplane equipped with a constant or two-position propeller. An interesting point here is that a finite time is required to establish

*Condensed from a paper entitled "Bringing the Private Owner Airplane Up to Date" presented by Mr. Short before the recent S. A. E. meeting of petroleum engineers at Tulsa, Oklahoma.

new flow conditions around the wing when its angle of attack or contour has been changed abruptly and it is this lag which gives the pilot time to operate the engine and surfaces for these take-off maneuvers.

While on the subject of aerodynamics we might comment on the fundamental requirements which have in the past few years been the basis of airplane stress analysis. The old rulings regarding design load factor have also seen a change while the airplane has been brought up to date. The ancient "airpocket" that gave the reporter a basis upon which to assign most air accidents or incidents has given way to a true definition of the disturbed condition of the air through which the machine travels. It is known as a gust and we have gust loadings becoming the design conditions. It has been demonstrated that, for modern airplanes flying level at speeds around 175 to 200 miles per hour through rough air with sharp edge gusts, vertical accelerations in the order of 4g could be expected. These accelerations introduced new structural design problems in bringing the airplane up to date. The gusts or bumps have always been in the air but striking them at high speeds came with the modern airplane and thus required a change in the factor of safety and operating conditions.

New structural problems have been uncovered as the speed range increased with modernization. Although the private owner rarely if ever wishes to dive his airplane in the same sense that the military pilot goes through his maneuvers, he has found occasion to make prolonged high speed glides in which we might enter gusty air at speeds upwards to 250 miles per hour. This has brought about the need of a limiting gliding speed and on the air speed indicator of the modern airplane a red point on the face of the dial serves as a warning of the maximum permissable gliding speed.

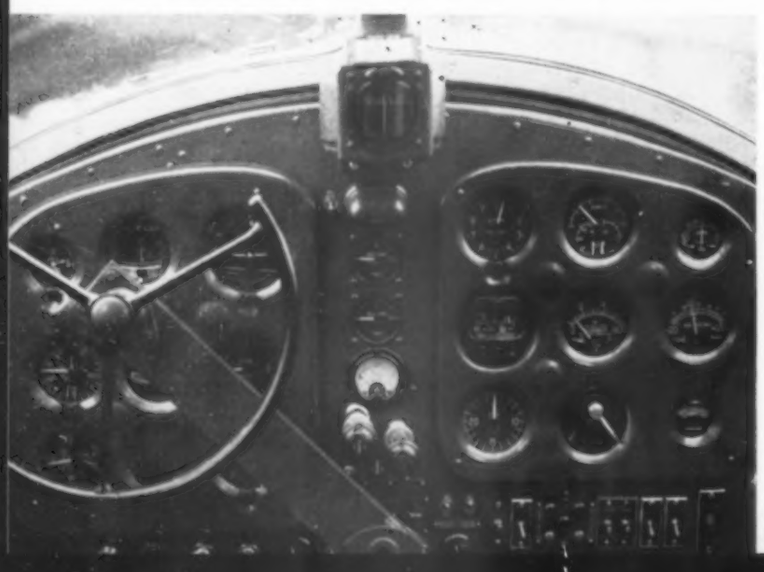
An interesting instrument which has now been made a part of many private machines and is mounted alongside the air speed indicator is the indicating maximum reading accelerometer. This instrument reads the maximum acceleration experienced in any one setting and has likewise a red warning mark on the face to remind the pilot that he should not exceed the rational design acceleration of the airplane. As the load factor for a given gust velocity varies directly as the airplane speed the modern machine is now designed and flown on the basis of a V-g (velocity vs. acceleration) basis.

Before leaving this point it is interesting to note that a further study shows the acceleration from the gust varies inversely as the wing loading and this fact prompts the modern designer to run the wing loading up so as to keep the acceleration on the passenger below the threshold of discomfort. But in so doing he has increased the landing speed of the airplane directly as the square root of the wing loading and this necessitates the lift increasing devices that have been previously discussed. Vertical upward accelerations of 2 to 2½ g are not distressing but downward accelerations of equal amount cause one to leave the seat, loose equipment to jump around in the cabin, and a definite physiological discomfort is experienced.

The Waco biplane equipped with an Edo amphibian gear is an example of the versatility of the modern airplane.

THE powerplant and its operation on the private airplane has certainly come in for its share of modernization. This includes the propeller as well as the engine and its accessories. The figure for the b. m. e. p. and r. p. m. has steadily risen for aircraft engines and with it, higher octane numbers for fuel. It is safe to say that all higher powered private machines today use 80 octane and 87 is just around the corner. When we can take one horsepower from about two cubic inches piston displacement on engines that are easily and safely operated by the occasional flier it would seem that the engine designer has gone a long way.

One of the interesting studies that now confronts the pilot is to determine just how much power he is using and may use at various altitudes and under various throttle conditions with the modern supercharged engine and controllable pitch or constant speed propeller. With the earlier form of sea level engines the owner-pilot thought little of, nor did he know much about, altitude cruising operation. This has come in with the controllable pitch or constant speed propeller and the supercharged engine. The airlines have shown the way and now the private owner, in his desire to keep up to date, also wishes to operate at the best altitude and power for the particular flight condition. It should be stated here that the modern airplane of the 300-500 horsepower class, whether private or corporate owned, is used far more extensively for closely scheduled cross country flying than in the past. Cruising operation has been brought up to date by flying at or near the recommended cruising limit of power at all altitudes. This in effect means that at the critical altitude of the engine one can operate continuously at full throttle and establish improved cruising speeds. The marked advantage of altitude operation can be illustrated by stating that for constant cruising horse-power, usually about 75% rated power, which can be held on some modern engines up to an altitude of 8,000 to 10,000 feet, the cruising speed at that altitude is approximately 15% greater than at sea level provided the propeller can be adjusted to provide similar efficiency



The instrument panel of the Spartan Executive is typical of the conveniences provided for the owner of a modern private airplane. On this panel are shown several of the instruments which are dealt with in Mr. Short's discussion.

The Wasp powered Beechcraft cruises at 235 mph at altitude.

with change of altitude. Increase in speed obtained with no loss in fuel economy means corresponding increase in maximum range of operation and cruising at altitude allows one to take advantage of prevailing winds, the total result being that we may now cruise comfortably at 150-185 miles per hour on a specific level consumption as low as 55 lb./h. p./hr.

In line with this increased use of altitude flying in conjunction with improved power plants and constant speed propellers, a great deal of attention has been given to fuel economy. This economy is valuable from a monetary standpoint and also from the increased operating range or increased payload angle as the fuel load is about 30% of the total useful load of a representative private machine. It has been found that these features necessitate the use of additional devices to adjust the fuel-air ratio for the maximum fuel economy consistent with efficient engine operation. The old method of adjusting the mixture to obtain the highest tachometer reading with a given throttle setting fails with the constant speed propeller unless the constant speed control is thrown into the extreme high pitch position while the mixture adjustment is made, which procedure is highly undesirable. Head temperature readings as indication of proper mixture setting are inaccurate and cannot be used efficiently due to the time elapse between the mixture adjustment and the final resulting temperature change.

One of the most interesting solutions to this problem is the Cambridge exhaust gas analyzer. This instrument measures and indicates the fuel mixture ratio by analyzing the exhaust gas, samples of which are drawn from the exhaust and passed through a thermal conductivity cell where they are electrically analyzed by means of a wheatstone bridge and the analysis shown on the indicating instrument. An interesting sidelight on this instrument is that it indicates detonation before it becomes apparent by other means of detection. This is shown by a fluctuation of the indicator needle which also creeps toward the full rich mixture. The pilot can immediately check this detonation by richening the mixture and then leaning it out to a position just above the detonation point. With carefully installed mixture control rods and an understanding of the operation of the exhaust gas analyzer, fuel air ratios of .072 can be secured by the average pilot without endangering the engine; in fact by this means he can be assured of operating at best power and thus again improve operating performance over the older methods of cruising with leaned out setting.

The swing seems to be toward "automatic" in the operation of the power plant of the airplane as in other forms of transportation equipment. This relieves the pilot of manually controlling various mechanical devices, the proper functioning of which can best be controlled by some automatic contrivance developed and set by the manufacturer. It should and is rapidly coming to this state with the modernized private airplane, thus relieving the pilot of the duties of operating the gadgets in order to devote his time to navigating and piloting, and towards a more comfortable flight for himself and his passengers. The fuel analyzer, which is almost automatic, has been a forward step and now the automatic mixture control and the automatic power control, to say nothing of the automatic oil temperature control, automatic valve gear lubrication, and a trend toward automatic carburetor air temperature control, all represent further advances.

The automatic mixture control is a singularly interesting modern accessory that, when installed, will take the place of the exhaust gas analyzer and relieve the pilot of the responsibility of properly proportioning the fuel air ratio. This unit, used in conjunction with a special type carburetor, maintains at constant pressure, the air entering the carburetor and opens the correct number of jets to give the desired mixture strength.

THE propeller of the private owner airplane has been advanced from the old fixed pitch two blade affair. We have made frequent reference to the controllable or constant speed propeller and before leaving the discussion of the improvements in the power plant of the private airplane a few remarks regarding the propeller development are in order. The first change was in making the pitch setting controllable in flight as a two position (high and low pitch) controllable propeller. More recently this has been extended to a constant speed variable pitch propeller. It is this constant speed type which seems to obtain the desired ultimate for maximum performance with minimum attention from the pilot. This propeller permits him to operate his engine with less regard for the throttle and its effect on r. p. m.

When the cruising condition is reached and the pilot wishes to reduce the power to that desired for cruising, he sets the constant speed control for cruising r. p. m. and adjusts the throttle for the cruising manifold pressure and the engine will be automatically governed to this r. p. m. and power if constant altitude is maintained. The use of the controllable pitch and later the constant speed propeller has been the greatest single achievement in the solution of shortening the take-off distance, the climb, and then the high cruising operation of the airplane. Engine manufacturers in conjunction with recently revised Department of Commerce regulations have rated our engines at a maximum permissable power output to

(Continued on Page 16)

The interior of the Stinson Reliant illustrates the attractive cabin appointments provided for the private owner of today.

The Maritime Commission Report

Southern Flight presents the first of a new series of articles on aviation by Harris B. Hull, Associate Editor of this publication who formerly wrote the column "From Washington." Mr. Hull's first article discusses the report submitted to Congress by Joseph P. Kennedy. In next month's issue certain other phases of this report, which now is being considered by Congress, will be discussed.

ANOTHER government department entered the aviation picture last month when the United States Maritime Commission published a report on "Aircraft and the Merchant Marine."

Submitted to Congress by the Commission's chairman, Joseph P. Kennedy, this report may be one of the most significant of a long list of documents turned out in Washington in the last ten years on the general topic of the flying business and how to control it. In preparing the report the commission had the assistance of Grover Leoning as aeronautical adviser.

It is significant for a number of reasons. First it is published by an agency which at the present time has little to say about aviation. This means that its authors can be expected to consider air transport rather objectively and calmly, attributes not always apparent in past documents. And also it is significant because of its contents.

For within the brief space of 35 pages the Maritime Commission paints as glowing a picture on the future of air transport as we have ever read, making statements and predictions which are backed up by a careful analysis of the facts.

Let us take for instance the Commission's comparison on what six flying boats each of 125 tons, carrying 150 passengers, could do in Trans-Atlantic service and compare this with the performance of three superliners of the Normandie and Queen Mary class.

And to test the reader's powers of foresight, or shall we say optimism, we will call on you to gaze into the future for a moment and make your predictions on the annual passenger capacity of six flying boats as compared with a couple of Queen Mary's with the Normandie thrown in as a spare.

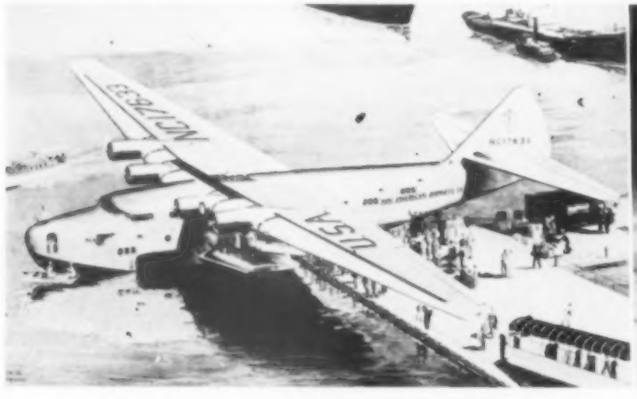
Have you made your forecast? If so write it down, remember we warned you and listen to what the Commission has to say.

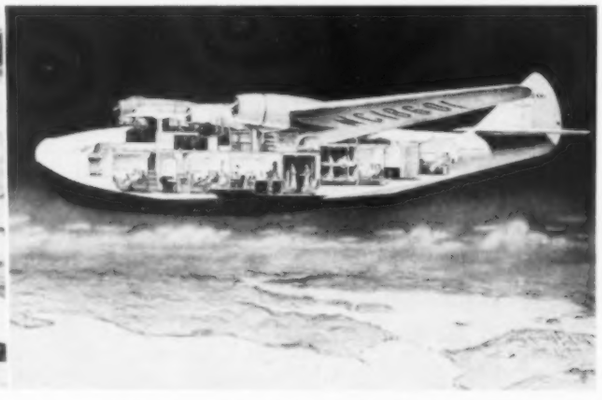
Mr. Kennedy and his colleagues tell us that taking six flying boats of "future" design, a schedule could quite easily be set up that would transport 109,500 passengers across the Atlantic as compared with 96,000 passengers transported in the period of a year in the little fleet of three we put together consisting of two Queens and the Normandie.

And how many horsepower hours, a good index of cost, do you suppose are required in the superliners as compared with the flying boats? The superliners would develop 8,800 horsepower hours per passenger crossing while the flying boat would require only 700. In a year a superliner could be expected to make 48 crossings while the flying boat could make 730.

Other figures show that three superliners would cost $50,000,000 each or $150,000,000 for our three vessels while the entire fleet of six flying boats could be built for $19,710,000.

With these figures as a background the members of the Commission sat down and wrote their report. No





Left: An artist's conception of the Boeing Model 314 Clipper which will have a gross weight of more than 82,000 pounds and will carry seventy-two passengers and a crew of eight. It will be powered by four 1500 horsepower double-row Wright Cyclone engines. Six of these huge flying boats are now being constructed for Pan American Airways for operation over the Atlantic and Pacific Oceans.

Right: This cutaway drawing shows the interior of the new Pan American Clipper being built by Boeing. At the forward end of the upper deck is the flight bridge with posts for the master and five other flight officers. Behind the control rooms, within the wings, are the main cargo compartments for mail and express, and directly behind them are the complete sleeping and living quarters for the crew.

The main deck, connected with the upper by a circular stairway, has passenger accommodations as complete and as comfortable as are available in land travel. In the nose of the hull is a compartment containing mooring apparatus and more cargo space, while the remainder of the main deck is devoted entirely to commodious passenger accommodations.

A dining and lounge salon is in the center section, a private apartment in the rear, a fully equipped galley in the forward section, lavatories and dressing rooms for men at the forward end and for women in an after section. Beneath the passenger deck there is a series of water-tight compartments running the length of the ship.

reporter can improve on what they have to say about aviation. Here are a few extracts:

"THIRTY years have elapsed since the old Mauretania established its Atlantic record of 5 days and 2 hours. The Normandie has succeeded in lowering that time by 2 hours. Even if the horsepower of the Normandie were doubled, at a prohibitive expense, the time of the crossing would be reduced by only eleven hours.

"Yet flying boats, in their present stage of development, promise a non-stop trip to Europe in 20 hours, while dirigibles have repeatedly made the crossing in 48 hours."

"The problem of transoceanic aviation is essentially one of range and size of aircraft. The work now going on in this country in design and actual manufacture will result in the immediate future in the construction of 120,000 pound flying boats of 5,000 mile non-stop range, carrying 40-50 passengers at an average speed of 175 miles per hour. The non-stop range of these new flying boats will change the potentialities of over-ocean air travel, as the weather hazards and delays will be greatly reduced."

Taking the above facts the commission concludes that:

"Reliability of aircraft presently available indicates, therefore, that the time is at hand when transoceanic airlines are becoming increasingly practical."

On the score of comfort the Commission reasons along for a few pages and then states:

"The comfort to be offered in transoceanic aircraft appears to be equal to that of a Pullman train and, because of the short time taken by a crossing, not inferior to that offered by competing forms of transportation."

In considering the matter of costs the Commission recognizes that in the final analysis the sign of the dollar probably will prevail.

It is stated:

"In the total expenditure of power for the number of hours used is found an indication of the cost of hull and machinery and of operating personnel that is properly attributable to each passenger."

Follow closely the conclusions.

"The superliner uses 8,800 horsepower hours per passenger crossing, and the flying boat uses only about one-fifth as much, 1,680 horsepower hours per passenger crossing.

"When it comes to still further increases in speed and consequent decrease in horsepower hours expended, the flying boat has by no means attained its limit. The superliner, however, even with its power doubled, could increase its speed only a few knots."

And in making this comparison the Commission was more than fair to the superliners because the 1680 horsepower hours per passenger crossing index is reached from studying 40 passenger boats and not the 150 passenger boats which the Commission states "are now under complete technical solution and are ready to construct when an order is placed."

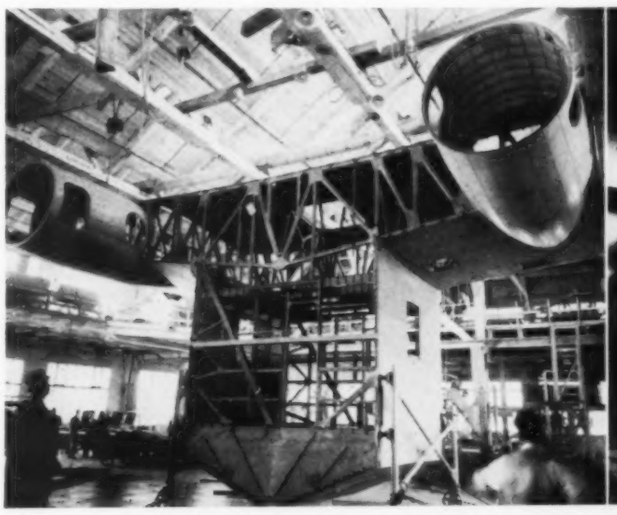
It should be pointed out here that the comparisons made in the earlier paragraphs are based on this "future design," that is 125 ton gross weight carrying 150 passengers. And this is entirely fair when we remember that these flying boats are "ready" when the order is placed.

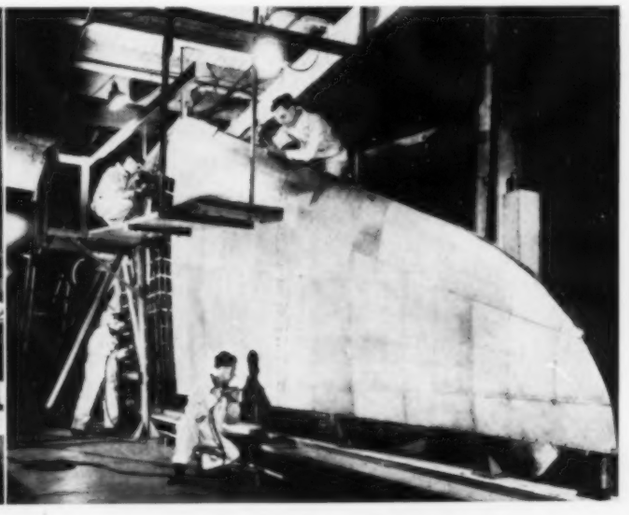
THROUGHOUT the Maritime Commission's report the superliners are given the benefit of every doubt so that as the report states, "the conclusions reached on the ultimate lower cost of the flying boat may be regarded as eminently fair."

For instance when the important item of maintenance is considered it is assumed that the cost of repairing a fleet of planes will be substantially equal to that of maintaining the boats. Yet actually the installed power in the six boats is aproximately one-half that of a single superliner. Yet it is true that maintenance costs have a tendency to roughly follow the amount of horsepower installed in the units to be maintained. Consequently it could be fairly assumed that the maintenance cost on the six planes would be considerably lower than on the three superliners needed to maintain a comparable service.

In other words the Commission leaned over backwards.

(Continued on Page 19)





Left: The structure of the center portion of the Boeing trans-oceanic monster flying boat. Photograph shows a portion of the hull which will contain the dining salon, and above it, the center section of the wing structure which will be used for cargo space. On the outer ends of the section are the two inner engine nacelles, which stand twenty-five feet above the assembly floor. All four engine nacelles will be accessible during flight by way of wing companionways.

Right: Although this structure looks large enough to be the wing of an airplane, it is in reality only the horizontal stabilizer for the 41 ton Boeing Clipper. The stabilizer measures approximately 49 feet from tip to tip and with elevators added has an area greater than that of the wings of many twin engined transports.

Reunion In Miami

The All American Air Maneuvers always provide the background for aviation's most colorful annual gathering and this year's tenth consecutive event was no exception.

George E. Haddaway

THAT inimitable president of the National Association of State Aviation Officials, Mr. Gill Robb Wilson from the State of New Jersey, delivered the annual report at his organization's meeting in Miami prior to the opening of Miami's annual classic of the air on December 2. His first statement was: "The development of aviation will dominate the history of the world for the next half century." Very well said, Gill, and poignantly true. But had your splendid speech been delivered *after* the opening day of the Air Maneuvers, we sincerely believe your statement would have been something like this: "From the looks of things here in Miami, the development of the light airplane will dominate the history of the world for the next half century."

You can call them "flivver planes," "putt-putts," "light planes," "sky pups," mosquito planes," or as the French say, "sky lice," but none of the names are appropriate or even remotely applicable to the little two-place jobs that are taking the country by storm and bringing flight within the reach of average young men and women of America. When the many hued armada of some 250 of them descended upon Miami for this year's Maneuvers, we were convinced the modern light plane had graduated, received its A. B. degree and gone out into the world on its own. As Al Williams remarked, so numerous they were, they looked more like a barrage of ticker-tape confetti dropping out of the skies as they circled and landed before the opening of the meet, while a more nondescript observer asked: "Where are all those damned things coming from?"

They came like bees from every point of the compass, through all kinds of weather and over every type of terrain. Their round trip mileage from their home bases to Miami would easily average 3,000 and few of their pilots had more than a private license. They had to stop every couple of hours for gas but they moved with more ease and safety with planned accuracy than a like number of military ships could have done, and completed a feat that would have been impossible with the same number of automobiles.

During the four days of varied air maneuvers at Miami's municipal airport, the little ships stole the show. They stunted, they raced around the pylons at full throttle, they puttered around in slow events; and Mike Murphy landed one every day atop an automobile.

Maybe it was the result of all this recent talk and emphasis on bigger, heavier and faster flying equipment that America's light plane fraternity decided to regain their share of the spot light in one bold stroke at Miami. Maybe it was a coincidence that so many owners of the little ships decided to take a jaunt to warmer climes on occasion of the Tenth Annual Miami classic. However, we do know that the Gulf Oil Corporation had something to do with the unprecedented number of voyagers and it was quite a sight on all the airports coming and going to see tank trucks, hand pumps and five gallon cans pouring free gasoline into the diminutive tanks, and to observe how grateful all the owners were for Gulf's generosity.

THE impressive influx of higher-powered private ships pushed the total on the municipal airport to well over five hundred on the second day. Like the little ships, these masterpieces of modern airplane manufacture for private owners bespoke renewed activity and sitting there staked down on the field, presented a sight for sore eyes. One could not but feel that just as the light plane has graduated, so will their owners graduate to these ships in the higher power and utility brackets.

So strong was the civilian element this year, the military units had to take a back seat. Nevertheless, the Marine Corps from Quantico under command of Col. Roy S. Geiger, the Opa-Locka Navy squadron and contingents of National Guard planes from five states together with a handful of Boeing and Martin Bombers, upheld representation of the military services. The Quantico group of 49 again cinched their top-notch position as master showmen.

Outstanding among special events were William Kuhn and Rusty Heard in a daily towing act in which Kuhn, bat-wing equipped, dangled on the end of a 100 foot rope from a plane piloted by Heard, and did a delayed jump with two chutes; Art and Irvin Davis in a dog-fight; Charley Abel in a glider act; and Lem Povey of the Cuban Air Force with his regular menu of scintillating, high-speed aerobatics for his third annual Miami appearance. Al Williams didn't get to show this year due to major last minute difficulties with his engine; he and his Gulfhawk were sorely missed.

Not on the printed program but enriching to the regular events were the flights of Richard Archbold of New York, who flew non-stop from San Diego to Miami in his Consolidated Flying Boat, Jacqueline Cochrane's record-breaking flight from New York to Miami in 4 hours and 12 minutes, and Sasch Seversky's New York to Havana record run on the same day, December 3, of 5 hours and 3 minutes. Both Cochrane and Seversky flew Wasp powered Seversky pursuits.

Death again rode the race track with the tragic loss

(Continued on Page 20)

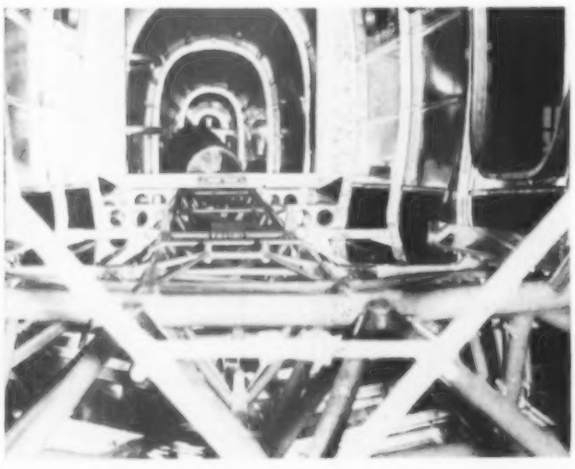
NGAR

The Spartan Executive

THE new Spartan Executive all metal airplane for 1938 is one of the most unusual airplanes of its type to appear on the market. It represents design innovations in basic construction that permit many desirable features in cabin arrangement and in the fuselage and wing design.

Instead of the conventional built up construction of dural, the fuselage and center section are built around a welded tubular steel truss which is Tee shaped. The cross member is the center-section of the monospar while the leg of the Tee forms a keel which extends along the under part of the fuselage to the tail wheel mounting. At the top of the Tee is the motor mount structure. The structure is triangular in section and is quite stiff and rigid.

In like manner the wings are built around a triangular section welded steel tube monospar which extends through the wing to the point where the tip is mounted. The spar is quite stiff under all condition of loading and absorbs bending, drag, and torsion loads on the wing. Attachment to the center section is made by the use of three taper pins which vary from 7/8 to 5/8 inches in diameter. Heat treated chrome molybdenum tubing having a tensile strength of 125,000 lbs. per sq. inch is used throughout in these structures.



An interior view of the fuselage looking aft. The welded steel tube keel and center section are clearly shown. Of interest is the fact that the fuselage structure is open back to the stern, permitting maximum convenience for inspection, overhaul and maintenance.

Due to the fact that the combination steel keel and monospar carry the severe loads of the landing gear, tail wheel, wing, engine, passengers and fuel, the construction of the fuselage and center section is relatively simple. The floor of the fuselage is laid on top of the keel and in addition the two heavy bulkheads that protect the cabin in case of nosing over are bolted to this member. These bulkheads are of heavy dural formed into a built up "I" beam and each has been tested to a load exceeding 7,000 lbs.

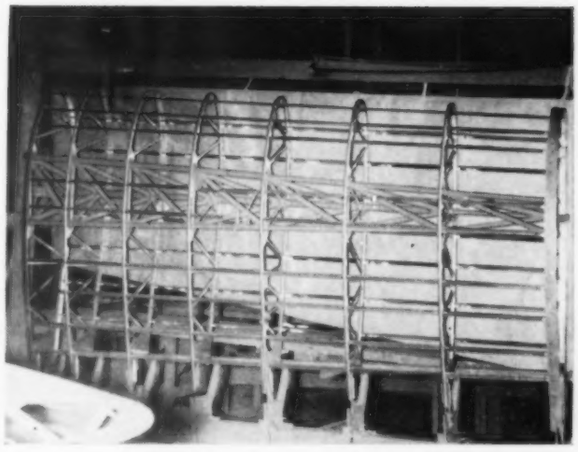
The aft section of the fuselage consists of light ring type bulkheads tied to-gether with formed dural stringers. The 24 ST Alclad skin is formed by a power hammer before being riveted in place and this results in a smooth surface with a minimum of wrinkles. An attractive feature of this method of construction that of ease of servicing. When the rear seat and wall of the baggage compartment is removed it is possible to crawl clear back to the rear of the fuselage to make repairs.

The wing structure consists of truss type dural ribs fabricated of flanged U dural sections. The ribs are assembled with rivets in a jig and then in turn riveted to the steel mono-spar. The ribs are tied to-gether with dural stringers and the assembly covered with 24 ST Alclad skin. There is no semblance of a rear spar although attachment points are provided for the ailerons and flaps. When the wing is attached to the center-section the gap is closed by a heavy dural strip which is attached by screws to stop nuts in the root ribs of the two components. The wing tip is detachable.

All control surfaces are of dural construction and covered with fabric. Each is statically and dynamically balanced and in all severe flight tests there has been no tendency to flutter. Control tabs are provided on both elevators. Ball bearing controls are provided throughout.

The flap arrangement is interesting in that the conventional wing flaps are used to-gether with a special belly flap. All the flaps are operated on the vacuum principle but a selective control feature permits the pilot to use all three flaps at once or the wing flaps separately.

The landing gear is of the single strut cantilever type. It is electrically retractable by use of an Eclipse motor and a simple and effective push pull arm that is connected to a knuckle at the top of the strut. The operation is full positive in all positions and locks in retracted or extended position due to the crank going past dead center. Attachment is made at the front of the spar on an

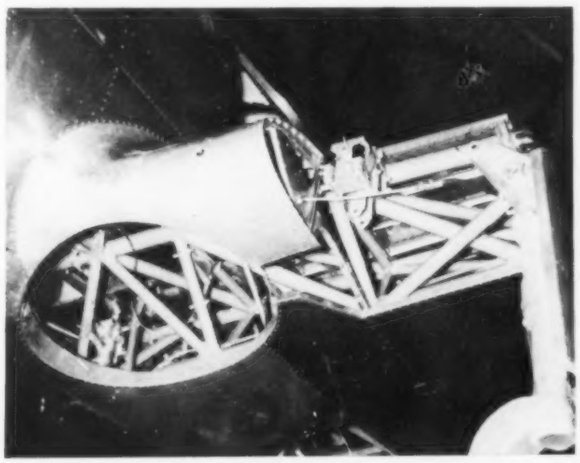


The construction of the welded steel tube mono-spar is clearly shown in this view of the wing before the skin is fitted. Note the truss type ribs and the general simplicity of the structure.

extension and the wheel rests in a well when the gear is folded up inward to the retracted position. The wide tread of the gear makes ground handling a pleasure.

The Wasp engine installation deserves mention due to the neatness of the arrangement and the great amount of space available at the rear of the engine for servicing. The cowling is arranged so that the formed nose piece is permanently mounted and the rest of the cowling made in four sections which may be removed individually. Removal of these sections provides space to service practically any part of the engine conveniently. All electrical connections from the engine mount to the fuselage are carried through a single Cannon plug detachable at the firewall. Plumbing lines are also concentrated for accessibility.

Due to the special design of the fuselage, the cabin arrangement is unique. A large door cut out has been provided in a position where it would not be possible in a fuselage which was not stiffened by such a method as the keel structure. The door has been centered about at the back of the pilot's seat in the normal position. When the back of the pilot's seat is folded forward, entrance to the rear seat is quite easily negotiated. The front seats have a slide travel of eighteen inches which makes entrance very easy. A large windshield and side windows provide plenty of vision.



Details of the landing gear retraction, center section structure and general arrangement are clearly illustrated in this picture.

Complete Laidlaw upholstery and Sherwin Williams finishes are used throughout. The cabin is attractively upholstered and the rear seat has an arm rest which raises to form a comfortable seat back for a fifth passenger who sits on a folding section extending in front of the seat. A large baggage compartment is provided behind the rear seat and access may be had through a large door on the side of the cabin if desired. Space for two large suitcases is provided with a weight allowance of 100 lbs.

The instrument panel is of airline pattern and carries a large assortment of standard and special instruments without crowding. The panel arrangement has been the object of long study and is noteworthy for the general neatness and efficient use of space. The panels have been pressed and cut to accommodate a large complement of various standard instruments. When the customer does not desire to use any certain instrument the opening is neatly closed with a metal blank. The panels are mounted on Lord rubber bushings.

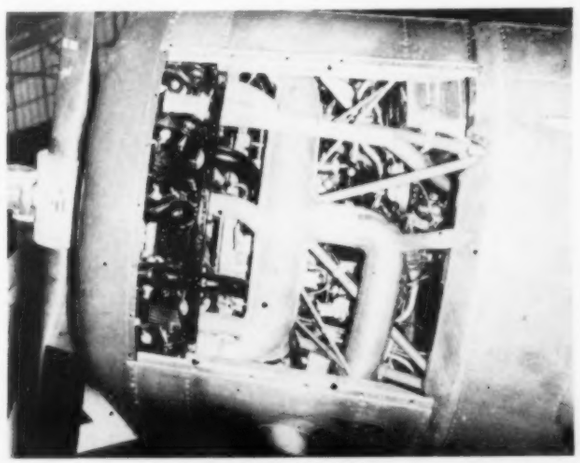
Grimes retractable landing lights and four electrically operated flares are standard equipment. All wiring is housed in conduits and the structure shielded and bonded for radio. Fuel capacity of 112 gals. is provided in two tanks located in the center section.

Powered with the Pratt & Whitney 450 hp Wasp Jr. engine, the Executive cruises at 205 mph at 9600 ft. The cruising range is 950 miles. Sea level cruising speed is 190 mph and landing speed 57 mph. The useful load is 1413 lbs.

Among recent buyers to take delivery on the Executive are the United Sugar Companies of Los Mochis Sinola, Mexico, State Government, Sanluis Potosi, S. L. P., Mexico, China Aeromotive Aerial Survey, Shanghai, China, Lucey Products Corp., Tulsa, Oklahoma, Olson Drilling Company, Tulsa, Oklahoma, Lee Drilling Company, Tulsa, Oklahoma, and Halliburton Oil Well Cementing Co., Duncan, Oklahoma. A total of three airplanes have been delivered to Transportes-Aeras de Jalisco, Guadalajara, Mexico, an air transport company.

SPECIFICATIONS:

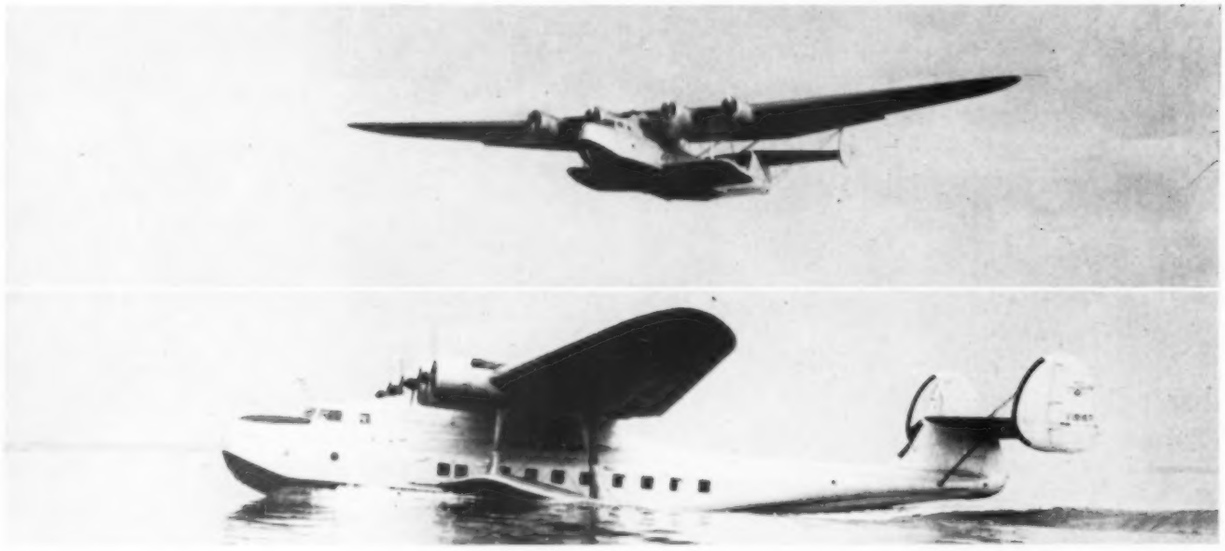
Span	38 ft. 11½ in.	Cruising Speed (Sea level)	190 mph
Length	26 ft. 10 in.	(9,600 ft.)	205 mph
Height	8 ft. 5 in.	Take Off (Sea level)	677 ft.
Wing Area	250.8 sq. ft.	Take Off ,With flaps)	500 ft.
Wing Loading	17.5 lbs./sq. ft.	Landing Speed (Flaps)	57 mph
Power Loading	9.8 lbs./sq. ft.	Rate of Climb. (Max.)	1,530 fpm
Useful Load	1,413 lbs.	Fuel Consumtion	22 gals per hr.
Gross Weight	4,400 lbs.	Cruising Range (Max.)	950 mi.
Fuel Capacity	112 gals.	Service Ceiling	22,000 ft.
Oil Capacity	7 gals.	Absolute Ceiling	24,000 ft.



The engine compartment shown with one section of the side cowling removed. The nose cowling remains permanently in position. The neatness of the assembly and general ease of servicing is apparent.

The Martin Ocean Transport

Increased Efficiency of the New Model 156 Makes 24 Hour Trans-Atlantic Service Possible With Operating Payload



Below: Beauty and efficiency are apparent in the lines of the Martin Ocean Transport as it taxis smoothly across the water. Powered with four 1000 horsepower Wright Cyclone engines, it is capable of carrying a 7500 pound commercial load between New York and London in the space of twenty-four hours with a 1000 mile reserve range.

Above: The Model 156 in flight. Note the arrangement of the sea wings and the dual rudders.

FOR the first time in world's history, it is possible to span the ocean between the United States and Europe with a profitable transport payload in a non-stop flight. The recently tested Martin Model 156 Ocean Transport is the first airplane to combine the size and efficiency necessary to make this possible. Furthermore, the trip from New York to London will consume but 24 hours despite the distance of 3,465 miles and there will still be fuel for a reserve of 1,000 miles.

The huge 63,000 pound transoceanic transport is designed to carry 285% more payload than the China Clipper and at a faster pace. The Model 156 will carry 7,500 lbs. of commercial load at a cruising speed of about 150 mph for 3,465 miles. The China Clipper can carry 3,500 lbs. payload at 130 mph for a distance of 2,410 miles.

Wing spread of the transport is 157 feet, 27 feet longer than the China Clipper. The area amounts to 2,300 sq. ft. The hull is 91 ft. 10 in. and the hull beam 11 ft. 3 in. The overall height (on the beaching gear) is 27 ft. 2 in. The sea wing span is 38 ft. 3 in.; flap length is 92 ft. 6 in. The horizontal tail spread is 38 ft. 6 in. and the span of the ailerons 24 ft. 9 in. The aspect ratio is 10.75, a very high figure and one that accounts for a considerable part of the increased efficiency of the airplane. The wing section is the N. A. C. A. 23,000 series.

Gross weight of the airplane is 63,000 lbs., which results in a wing loading of about 30 lbs. per sq. ft. This loading is conventional for a flying boat of this size. The payload, fuel and oil weight is calculated at 30,458 lbs. The disposal load is figured at 32,586 lbs. and the empty weight with engines, 30,414 lbs.

Take off time with full throttle and normal gross weight is 35 sec. The altitude at which level flight can be maintained, with only three engines operating at normal rated power for that altitude, of 10,000 feet, attests the ample reserve power of the big luxury liner. Four Wright Cyclone 1,000 hp Model SGR-1820-G2 engines provide the power. The propellers are three-blade Hamilton Standard constant speed type and equipped with "Quick" type brakes.

Besides carrying the fuel load of 4,260 gals., the sea wings contribute to the lift and stability. They also increase maneuverability on the water, permitting shorter water turns with controlled bank. This stabilizing function in water movements aids rapid handling and also helps in take off.

The tail surfaces are of the double rudder type. The result is improved directional stability, lessened "hunting" tendency of the ship, and consequently the directional control of the ship has become more effortless for the pilot.

Except for engine mounts and points of high concentrated stress, the construction is of Alclad duraluminum. Great strength and resistance of the hull bottom and deck results from a corrugated construction.

From bow to stern, unique efficiency of space use and load distribution have been effected.

The bow cockpit and anchor hatch is used for mooring operations and storage of mooring equipment, anchor and searchlight, and provides the mooring seaman's compartment.

The dual flight control station, with side by side arrangement of the flying controls, is located on the bridge of the giant airliner. The first pilot's seat is on the port side and the second pilot's on the starboard. In the control cabin below and to the left of the first pilot, the radio operator and radio equipment station is so placed to permit the ready exchange of messages and hand signals between the pilots and radio operators.

The navigation station in the control cabin, aft of the pilot's station, contains map cabinets, chart room, marine library and navigational equipment. It, also, is immediately adjacent for quick interchange of signals.

The power plant control station for the flight engineer is in the cabane on the hull just forward of the front wing beam. The operations of the flight engineer tend to relieve details not directly concerned with piloting and tend to unburden the pilot from detailed mechanical functions. The contiguous location of the power plant control station affords easy coordination of all functions.

Instrument panels, gauges, landing and navigation light controls are all within easy reach and sight. Sperry Gyro Automatic Pilot and all flight controls are within instant touch of the pilots. Control cables run through protecting tubes. Windows in the pilot's station are the sliding non-breakage type, to permit taking sun and celestial bearings, and have sliding curtains for shading the sun glare by day.

The hold for mail, express, and cargo starts near the bow of the hull and extends back aft of the galley, and an auxiliary hold for lighter cargo extends back to the retiring rooms. Extra emergency electrical and radio equipment space and additional crew member quarters are in the tail, aft of the retiring rooms.

A hatchway is placed near the luggage compartments in the rear and another for pilots and crew use leads to the control station.

First, second and third passenger compartments and lounge, providing maximum freedom of movement, are convertible into sleeping quarters at night with ease and lack of disturbance to the passengers. Accommodations are provided for 45 passengers for day or sleeping accommodations for 26.

A steward's galley furnishes deluxe cuisine. Full vision windows make observation a pleasure. Luggage space is so arranged to be out of the way and permit freedom of movement to the passengers. Personal luggage is placed under the seats of the passengers where it is most convenient to reach, and shelf compartments in the rear with zipper type panels hold the less frequently used passenger baggage. Furnishings are finely appointed to enjoyably blend into hotel-like luxury. Soundproofing isolates the passengers from all exterior noise.

At night the individual berths (larger and wider than pullman berths) are arranged so that sleeping comfort is assured. The retiring rooms have all modern toilet facilities. An intriguing feature, contributing to passenger convenience, is found in the luxury lounge. When the lounge is ready to be converted into berths at night, the top of the reading table is removed, exposing several highly polished wash basins. Mirrors are also thus disclosed in the reverse of the table top.

The heating system, motor warmed Prestone, circulates warm air to all compartments, maintaining regulated temperatures of 65 to 70 degrees. It also provides hot water for passenger use and for the galley.

SPECIFICATIONS ARE AS FOLLOWS:

Wing Span	157 ft.
Overall Length	91 ft. 10 in.
Overall Height (on beaching gear)	27 ft. 2 in.
Height above water line	20 ft. 6 in.
Beam of Hull	11 ft. 3 in.
Span of Sea Wing	38 ft. 3 in.
Wing Chord-max.	18 ft. 11 in.
Gross Weight	63,000 lbs.
Disposable Load	32,586 lbs.
Weight Empty	30,414 lbs.
Payload, fuel and oil	30 458 lbs.
Cruising Speed	145 to 170 mph
Landing Speed	70 mph or less
Take off time	35 sec.
Range (maximum)	3500 (route miles) to 5,000 (still air miles)
Altitude at which level flight can be maintained with three engines	10,000 ft.

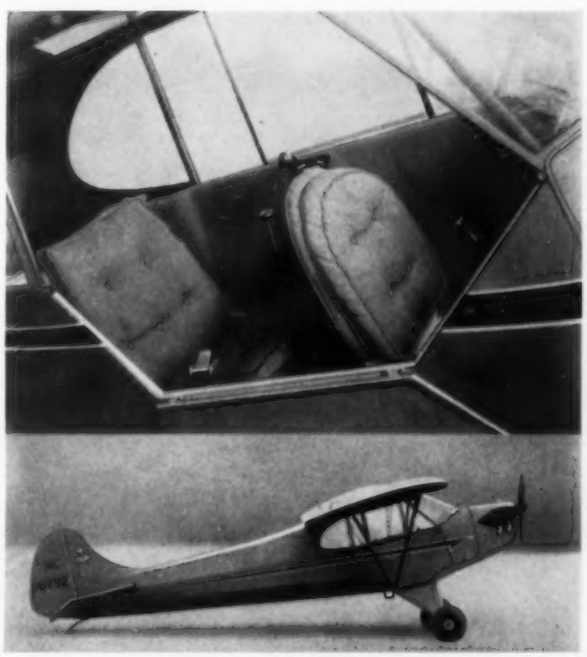
New 1938 Cubs Announced

DURING the Second Annual Cub Distributors Convention held at Lock Haven, Pennsylvania, more than seventy-five Cub representatives were shown the new 1938 Cub "Sport." Known technically as the J-3, bearing a new ATC, the "Sport" has been intended primarily as a private owner airplane and will supplement the Cub "Trainer" which will be offered during 1938 for the airport operator and flying school. The Trainer is basically the same as the 1937 J-2 Cub but comes with enclosure, roller bearing wheels and over sized tires as standard equipment.

The J-3 boasts more than fifty major and minor changes throughout its construction. Most details are found, however, within the cabin where comfort and convenience have been of utmost importance in the design of the new ship. By lengthening the cabin a full seven inches, a great deal more leg room results for both occupants. The rear seat is now full 26 inches wide and is of hammock construction. The front seat, made of welded steel tubing is wider without interfering with the rear rudder pedals. All control wires, except the rudder cables, have been run underneath the full plywood floor boards leaving no obstructions in this respect. Sides, top and rear of the cabin are upholstered with whipcord, backed by doped fabric to prevent stretching and damage. The seats have deeply upholstered cushions made by manufacturers of regular automobile upholstery. The ignition switch and gasoline shut off are now recessed in an inset on the left side within easy reach of both seats. A stabilizer crank, with indicator showing position of stabilizer at all times, is also on the left side. The wire cable connecting to the stabilizer worm gear may be adjusted for tension by a snub up pulley accessible through an inspection window. The instrument panel is newly designed to allow for the installation of extra instruments and is done in crackle finish as are all other metal parts within the cabin. The baggage compartment cover lies horizontal to make room for maps, cameras, hats, etc.

Externally, the Sport's main change is an enlarged fin which has been doubled in area to give greater directional stability. The top deck has been revamped to provide a better flow of air aft and the addition of fairing strips on the sides adds considerably to the speed of the ship. Streamlined shock cord covers are available as optional equipment. Standard finish is yellow with black stripe including a hand rubbed finish.

The cabin of the ship is now an integral part of the fuselage allow-



Below: The new J-3 Sport Cub for 1938. Note the general improvement of the lines of the airplane and streamlining.
Above: The attractive appearance of the Cub Sport interior is noteworthy. Fully upholstered chairs and interior has been provided as well as completely enclosed control wires and throttle push pull tube. Length of the cabin has been increased seven inches.

ing the windshield and side windows to be completely weatherproofed. The windows, themselves, have been enlarged for better visibility. A rear vision mirror enables excellent vision aft through the top deck window.

Gross weight of the J-3 has been raised to 1,000 pounds allowing a baggage weight of 20 pounds and room for extra equipment.

SPECIFICATIONS:

Length over all	22 ft. 5 in.
Height overall	6 ft. 8 in.
Wing span	35 ft. 2½ in.
Total area	178 square feet
Chord	5 ft. 3 in.
Weight empty	475 lbs.
Useful load	426 lbs.
Baggage allowance	20 lbs.
Cruising speed	76 mph
Top speed	88 mph

Power plant—
Continental 4 cylinder 40 hp engine, dual or single ignition

Your Money's Worth

(Continued from Page 6)

be used for take-off for an operating period of at least one minute. Controlling the pitch of the propeller makes available high static and take-off thrust resulting from full power which allows the pilot to fly out of restricted fields and over obstacles that heretofore required considerable skill, and otherwise would be impossible with heavy wing loadings and high speed ranges.

Comfort and visibility for the pilot and passenger are steadily being improved. Accepted use of sound-proofing and heat insulating the cabin walls is being made. Weight allowances for sound proofing and insulation become a factor. The presence of a powerplant in the nose of a machine and numerous windows and glass panelled doors makes the sound levels difficult to hold down. Probably a fair value for the rear seat of a five place machine operating at cruising speed, where the propeller tip speeds are well below the velocity of sound, might be as low as 60 decibels. This is a distinct improvement when we recall that the power and flight speeds have both gone up. Heat and cold insulation, both from within and without, are receiving increased attention, the latter most seriously.

As one can now readily encounter ground temperature variations of from 50 to 75 degrees F. on a single flight, the manufacturer has endeavored to combat this by adequate cabin temperature control. Fortunately air-condition for cool air is not so serious as in the land vehicle, although ground cooling of modern metal airplanes is causing the designer some concern. Ventilation has not experienced as marked improvement as other phases of the airplane, because the necessity for vision, inspection, and general methods of assembly, does not lend itself to draft, noise and carbon monoxide free ventilation systems. Pressure changes, noise and fumes in automobile ventilation indicate the seriousness of the problem when applied to an airplane whose interior dimensions and accommodations are not greatly dissimilar. However, fixed windows and controlled ventilation ducts that distribute hot and cold air are being installed. Pollution of the ventilation from exhaust gas leakage is being more carefully measured and steps taken to avoid carbon monoxide entering the cabin.

THE presence of all these new devices and improvements in the basic airplane and power plant may tend to startle the flying power if rudely injected into the problem of using them all for the first time. This is not necessarily the case as many are semi to fully automatic and others have been coming along as a gradual evolution. The engine controls may be in themselves more complicated but the operation is reasonably simple and the full automatic power plant is not too far distant. Already the flaps have been made automatic in their operation by tieing the actuating mechanism into the throttle movement occurring at landing. Retractable landing gears have many ingenious devices to remind the pilot of their position. Balancing tabs for ready correction of change of trim of the airplane make control movements simple and less strenuous. All of these features which have brought the airplane up to date have been reflected in improved operation for which it seems any complications that they might impose are justified.

To tell where we are going requires a look forward. The logic is like the story of the birds who fly backward as they are more interested in seeing where they have been than where they are going. However, if the private owner, who really uses his airplane to make good average speeds at least three times that of the automobile, will really observe the trend he can well expect such developments as extremely effective semi-automatic flaps, tricycle landing gear arrangements, automatic power control, improved engine reliability and highly perfected instruments and radio equipment. He can continue to fly as safely, or more so, at speeds up to 200 m. p. h. as his neighbor on the crowded highway. One must realize, however, the airplane has certain definite limitations above which difficulties will be encountered. It is an efficient and rapid means of transportation but cannot be expected to exceed the limitations of mechanical or human skill. Recognized as such, we can reasonably expect a steady improvement and perfection in design and efficient operation, and consequently extension in the use of the private or corporate owned airplane of the size we have chosen to compare with our modern, comfortable, but nevertheless like-wise "gadgety" motor car.

Futures in AVIATION await many. We can help YOU. Write to-day for folder "Opportunity in Aviation."
LUSCOMBE SCHOOL of AERONAUTICS
WEST TRENTON — NEW JERSEY

News of the Month in Review

THE INDUSTRY LOOKS HOPEFULLY TO 1938
Optimism Reflected in Sales This Year

● In the face of current talk about a business recession, the aviation industry in general has the satisfaction of looking back on a year of sound and substantial growth. And, there are concrete indications from all quarters that 1938 will provide even greater opportunities.

Leighton W. Rogers, president of the Aeronautical Chamber of Commerce, has just recently released sales figures for the first nine months of this year. His report states that total sales for this period this year amount to $80,615,059 as compared with $47,978,661 for the same period in 1936. This is a gain of 68%.

The sales for this year include 1,854 commercial planes, valued at $15,105,485 less engines, as compared to 1,145 planes, valued at $8,551,786, for 1936, an increase of 76.6% in value. There were sales of 541 military planes, valued at $23,498,482 less engines, as compared to 534 planes, valued at $11,668,791 in 1936, an increase of 101.4%.

Commercial engine sales amounted to 3,292, valued at $11,337,193, as compared to 1,948 engines, valued at $6,131,211, an increase of 84.9%. Military engines totalled 1,495 units, valued at $11,080,120, as compared to 1,294 engines valued at $10,896,448 in 1936, an increase of 1.7%.

Despite a tragic winter preceding this year's business, air transport lines managed to garner increases of from 10 to 15% for the first nine months of this year. Spring, summer and fall traffic was very gratifying and October proved to be the biggest month in history.

As winter creeps on, traffic has declined sharply in some cases and in others not so much. But there is evident on every hand the fact that the airlines are progressing successfully on their task of convincing the American public that winter flying is thoroughly safe and reliable. With that object achieved, an unprecedented amount of traffic will flock to the air terminals in the early months of next year.

An example of the broad planning and confidence for next year is the recent announcement of the Piper Aircraft Corp. A total budget amounting to $75,000 has been allotted for advertising which will appear in a large number of aviation magazines as well as general interest publications. Manufacturing facilities and sales outlets have been developed to fulfill a program aimed to produce and sell more Cub airplanes than the total sales of all commercial planes for 1937.

Financial Reports Show Profits

NORTH AMERICAN

● According to J. H. Kindleberger, president of North American Aviation, Inc., the company reports a consolidated net profit of $225,787.54 for the nine months period ending September 30. This figure is net after provision for Federal excess profits and normal income taxes, and after depreciation charges amounting to $528,722.82, but before including a profit of $1,267.50 realized on the sale of securities. Including the latter, the first nine months of 1937 showed a net profit of $27,055.04.

For the comparable period of 1936, a net profit of $137,957.19 was chalked up. The unfilled orders of the engineering and manufacturing division of September 30 amounted to $9,239,956 as compared with $922,913 a year previous. At a meeting held November 22, the board of directors declared a dividend of 12½c per share on the outstanding capital stock.

GLENN L. MARTIN

● The Glenn L. Martin Company reports third quarter sales of $3,218,750.66, with net earnings (after all appropriate charges for depreciation, experimental and development expense, and taxes, but without provision for possible excess profits and undistributed earning's taxes) of $492,532.11. These earnings equal 56c per share for the third quarter, or $1.17 per share for the nine months ended September 30, with 870,041 shares outstanding. Total net earnings for the nine months are $1,018,839.

The company's back-log of undelivered orders has increased materially. As of September 30, the back-log totalled $13,490,329. On June 30 the back-log amounted to only $11,406,663. Since third quarter sales totalled $3,218,750, it is apparent that new business, not publicly announced, has been accepted by the company in the total sum of $5,302,416.

The company's plant expansion program is rapidly nearing completion. The new engineering building will be occupied by December 1st, and the new assembly hall and plant facilities for the construction of large aircraft of all types, will be finished about January 1st. This expansion will effect a substantial increase in the company's rate of production.

AVIATION CORPORATION

● The consolidated statement of profit and loss of the Aviation Corporation and subsidiary companies for the nine months of the current fiscal year ending August 31 shows a consolidated net profit in the third quarter of $60,475. Net sales of manufactured products for the nine months period amounted to $3,231,000. The $60,475 profit in the third quarter reduces the net loss of the company for the nine months period to $82,681.

L. B. Manning, president of the corporation, stated that the company now has on hand more than $5,000,000 in unfilled orders for private and military planes, engines, and propellers.

BEECH

● In an annual report just issued, Walter H. Beech, president of the Beech Aircraft Corp., announced a net profit of $14,042.01 for the fiscal year which ended September 30. This figure allows for the deduction of $5,172.44 for all State and Federal taxes. Unfilled orders amounted to $320,000. During the year the net proceeds of a stock sale amounted to $321,656 which was invested in the purchase of the land and buildings comprising the manufacturing and testing facilities as well as manufacturing machinery and to provide working capital required for the increase in the volume of business. Sales for the fiscal year amounted to $787,574.

UNITED AIRCRAFT CORPORATION

● The board of directors of the United Aircraft Corporation voted November 22 to pay a dividend of 50c per share on the capital stock of the corporation. The dividend will be payable December 15, to stockholders of record at the close of business December 3. As of recent date, there were 26,433 holders of record, and 2,523,580 shares outstanding. This does not include 6,715 shares of United Aircraft & Transport Corporation still outstanding and not exchanged by 592 stockholders.

Get There First and Get the Business!

How much is an extra business day worth to you? Figure it up—can you possibly afford NOT to fly these day-saving Braniff B-Liners? Save extra days and hours between Chicago, Kansas City, Wichita, Oklahoma City, Dallas, Ft. Worth, San Antonio, Houston, Brownsville and Mexico. Every modern travel luxury. Hostess service. Delicious meals aloft. For reservations or information, call any air line, hotel, travel or telegraph office.

BRANIFF AIRWAYS — BRANIFF DOUGLAS B-Liners

BOEING

● Boeing Airplane Company and its subsidiaries announced a consolidated net profit of $121,546.13 (equivalent to earnings of 17.5 cents per share) for the third quarter of 1937 and $375,442.75 (earnings of 54 cents per share) for the first nine months of the year.

The report, released by President C. L. Egvedt, included provision for all Federal taxes except surtax on undistributed profits. Subsidiaries of the company whose business is reflected by the statement are the Stearman Aircraft Company of Wichita, Kansas, Boeing Aircraft Company of Seattle and Boeing Aircraft of Canada Limited of Vancouver, B. C.

A year ago the company reported a consolidated net profit of $39,289.19 for the third quarter and $131,712.42 for the first nine months, equivalent to earnings of 7.5 cents and 25 cents per share for the respective periods.

Since the issuance of the last earnings statement of June 30, the company has completed its refinancing program. Earnings per share in the current statement are computed on the basis of the increased number of shares now outstanding.

LOCKHEED BACKLOG REACHES RECORD HIGH

● A new peak in orders was reached the first of December when Lockheed Aircraft Corporation announced a backlog of business amounting to $6,125,000, a gain of 169% over the same date a year ago. This compares with $2,275,000 reported as of the same date a year ago and with $3,173,000 and $2,878,000 reported at the end of the six and nine-months' periods of 1937, respectively. According to Robert E. Gross, president, the bulk of the orders are for the new model 14.

The number of planes delivered from January 1 to date total 85, comprising 46 Electras, 34 model 12's and five model 14's. This compares with deliveries of 24 Electras and six model 12's as of the same date a year ago.

Lockheed has followed a vigorous export sales policy and has made a goodly percentage of the total sales abroad. The Model 14 recently made a transport record of 55 minutes between Washington and New York which compares with the regular airline time of 80 minutes. The company now employs 1,890 persons at the Burbank factory.

CUB COMPANY RE-CHRISTENED

● Most recent announcement from the former Taylor Aircraft Company, of Lock Haven, Pennsylvania, is the change of the firm name to Piper Aircraft Corporation. The firm, which was organized by W. T. Piper ten years ago, will continue with the same engineering force as has been identified with it since the advent of the Cub plane. Official designation of the products produced by the Piper Company will be "Cub Sport" and "Cub Trainer."

More than 75 Cub distributors and representatives met at Lock Haven on November 8, 9, 10 for what is considered the largest aircraft sales convention ever held. Of the 36 domestic distributors, 34 were on hand.

Foreign representation was made at the convention by Jack Hedgegard, Cub Aircraft, Ltd., of Denmark; R. L. Gibson, Cub Aircraft, Ltd., of Canada, and Robert N. Jonas, representing Cub sales in South America.

During the convention two new distributors were appointed. St. Louis Flying Service will distribute Cubs in Southern Illinois. Larry Larsen placed an order for three Cubs to be delivered to Seattle and shipped to Alaska, where he will act as Cub distributor.

AIR ASSOCIATES AND NICHOLAS-BEAZLEY UNITE

● At a meeting held November 29th, the stockholders of Nicholas-Beazley Airplane Co., Inc., approved a plan to combine with Air Associates, Inc. Under the terms of the deal, stockholders of Nicholas-Beazley will receive one share of Air Associates common stock for each five shares of Nicholas-Beazley common. Both companies have been long established in national distribution of aircraft materials and Air Associates also manufacture standard aircraft hardware and special aircraft equipment.

The merger gives Air Associates additional sales outlets throughout the country and is expected to widen the scope and substantially increase sales during the coming year. Combined sales of the two companies during 1937 will exceed $1,800,000. Present unfilled orders are in excess of $250,000.

ARMY BUYS MORE HORSEPOWER

● The War Department recently closed a deal with the Wright Aeronautical Corp. for airplane engines to cost a total of $2,044,490.

The first contrast is for 156 engines at a total cost of $1,340,976. These engines are Type 1820-59, Cyclone, 9 cylinder single row, delivering more than 1,000 hp. They are being procured for installation in and spares for B-17B bombardment airplanes now being constructed by the Boeing Aircraft Company.

The second contract is for 82 aeronautical engines to cost $703,514. These engines are type 1820-49, Cyclone, 9 cylinder single row delivering 850 hp at sea level. Of these engines, 55 will be installed as power plants in 0-47A airplanes now being procured from the North American Aviation, Inc. The remaining 27 engines are required as spare parts and replacements on engines originally installed in 0-47A airplanes for the National Guard and for the Army Air Corps.

Another award has been made to the United Aircraft Corporation for 43 additional model R-1535-13 geared engines and spare parts involving a total cost of $447,328. The engines are of twin row, fourteen cylinder design and normally develop 750 hp. Installation will be made in Northrop A-17A attack planes now being constructed by the Northrop Corporation.

PAY CHECKS BIGGER AT DOUGLAS

Effective October 1, Douglas Aircraft Company hiked the monthly payroll budget by $35,000 in granting a blanket increase of three cents per hour to all hour rate employees. The increase will be payable on December 15 and all but 300 employees of the 7,055 in the factory will benefit.

Two years work will be required to complete the $32,444,212 backlog of orders now on the books. Annually the Santa Monica plant absorbs ten million hours of production labor and 900,000 hours of engineering skill.

Capt. Eddie Rickenbacker, president of Eastern Airlines, called personally at the factory recently to take delivery on five new Douglas transports purchased at a total cost of $500,000.

Henry Ford Rebuilds Wright Brothers Home

To the left may be seen the Dayton birthplace and early home of Orville and Katherine Wright. Wilbur Wright was born in Indiana. Right: The bicycle shop in which the famous brothers produced their early designs. These two buildings now stand in Henry Ford's Greenfield Village, Dearborn, Michigan.

Wright Brothers Home and Shop Reconstructed

A long neglected task is at last nearing completion in Dearborn, Michigan, with the reconstruction of the birthplace of aviation. Located in the Early Bird's Aircraft Exhibit of the Edison Institute Museum is the Wright bicycle shop and home which originally stood in Dayton, Ohio.

The bicycle shop, in which were produced the early Wright gliders and the actual airplane which made the first successful controlled flight, has been equipped with much of the old machinery which was used by the famous brothers. Included in the equipment is the Putnam lathe, Barnes drill press, the band saw and grinder. Some of the benches from the old shop have also been found and are being placed in the building. The gas engine which furnished power for the shop and the wind tunnel, however, will have to be reconstructed and Orville Wright is assisting in this work.

The Wright home is the Dayton house in which Orville and Katherine were born. Wilbur Wright was born in Indiana. The brothers grew up in Dayton, however, and as young men remodeled the house several times. Some of the original furniture has been found and is being placed in the old home.

Although nothing definite has been accomplished toward the return of the original Wright bi-plane from England it is hoped that suitable arrangements can be made in the not too distant future to place the famous airplane on American soil and give proper credit to the successful pioneering work accomplished by the Wright brothers.

Dear Steve:

All communications published under this head must be signed by the actual name of the writer. The editor is not responsible for the opinions expressed, but reserves the right to exercise discretion as to what shall be published. Letters must ordinarily not exceed 500 words.

★

Tulsa, Oklahoma
December 4, 1937

Dear Steve:

We are sending you a copy of the letter, which we have dispatched to Secretary of Commerce Roper, in the hopes you might publish it in virtue of its special significance to aviation in the Southwest:

On Thursday, December 2nd, 1937, approximately 100 pilots, whose names and addresses are attached hereto, convened at the Mayo Hotel, Tulsa, Oklahoma, for the purpose of studying the new Air Commerce regulations which went into effect November 1, 1937. We asked Mr. Joe Shumate, Supervising Inspector of the B. A. C., from Dallas, and Mr. Al Meyers, Inspector for Oklahoma, to be present and to give us their interpretation of various regulations about which there was some misunderstanding. They were present and materially aided in the work of the convention.

The pilots attending the convention represent a cross section of the aviation interests in this state and elsewhere. The general expressed opinion is to the effect that the regulations in general are helpful, fair and will promote the public interest and safety. However, it is the opinion of the convention that a slight modification of some of the rules to fit special conditions would not be amiss.

It is respectfully submitted for your consideration that the group represented here today has been prominent in the furtherance and advancement of the art of private air transportation during the post war period. Here our distances are great. Rail facilities are relatively poor and industries in this section of the country have been quick to realize the many advantages of the airplane. Many of our ships are owned by oil companies and others who are closely related to the oil industry. There are many high priced single and multi-engined airplanes in this territory. Business men in this country have come to look upon the airplane as a safe and reliable means of transportation, indispensable to their business. Many of them have hired ex-airline pilots and other pilots of wide experience. These owners have spared no expense in equipping their machines with the latest available aids to air navigation. These men are very appreciative of the air navigation aids supplied to them by the Bureau of Air Commerce and have facilities for taking full advantage of these aids. When they make cross-country trips they usually do so on very short notice. These men are long accustomed to flying any reasonable weather conditions in pursuance of their business, and in so doing have established an enviable record of safety and efficiency of operation. If the usefulness of airplanes is unduly hampered by restrictive regulation, these operators are apt to look to other means of transportation. In order that this may not happen, and that these operations may still be safely carried on, the following suggestions are respectfully submitted.

1. In consideration of the fact that the flat terrain encountered in the middle west does not involve the hazardous conditions to be found in mountainous country, it is recommended that contact flight be permitted at 500 feet above the ground with a visibility of two miles and a ceiling of 600 feet, provided that if such flight is conducted on or across an airway, airway traffic control is properly notified. In this connection, it is suggested that the minimum of 300 feet from cloud base be retained except when ceiling is below 800 feet.

2. In order that contact flights may not be unduly restricted by local conditions such as smoke or light ground fog, it is recommended that contact flight be authorized to leave or enter airports having visibility of ½ mile or better due to local conditions, provided that ceilings are minimum or better.

3. Due to the present lack of communication facilities between airway stations, securing of clearance for instrument flight from point of first intended landing frequently entails considerable delay. Consideration of this fact is suggested; that clearance for flight should be granted at the point of origin of the flight.

4. It is suggested that the rules governing instrument flight be made more flexible in the interest of efficient operation. Under the regulations as in force at present, local restriction of visibility and ceiling due to local fog or smoke may prevent a flight to good weather which could be accomplished without undue hazard. Likewise, completion of a flight may be unnecessarily prevented. For instance, it would appear unfair to classify an airport as X when the ceiling is unlimited and the visibility is ½ mile, or when the ceiling is 400 feet and the visibility is 15 miles—conditions frequently encountered in the Southwest. It is further suggested that takeoffs and landings be governed by different minimums. We believe that if modifications are made in line with the above suggestions, operations may continue on an efficient basis without the sacrifice of safety.

5. In connection with the regulation that private pilots may not carry persons or property for hire, it is our experience that many private pilots are employed by companies for certain duties in which the use of an airplane is frequently desirable and beneficial. The regulations have been interpreted to exclude this private pilot from using his airplane in connection with his company's business if he receives any remuneration whatsoever for so doing, and expenses in connection with the flying of the airplane have been regarded as remuneration. It is suggested that consideration be given this rule with respect to modifying it to permit a private pilot to receive reasonable expenses, such as gasoline and oil, insurance, mechanical work, etc., but not any remuneration which could be construed as profit as direct payment for his services as a pilot.

6. The regulation preventing two private pilots, neither of whom has an instructor's rating, from flying in the same ship, if equipped with dual controls, in some instances works a distinct hardship on such pilots who have tandem airplanes and who frequently relieve each other on cross-country trips. It is suggested that this regulation be modified so as to permit two private pilots to relieve each other on cross-country trips made in a dual control ship without either of the pilots holding an instructor's rating.

Resolutions were adopted by the convention unanimously in which these foregoing suggestions were embodied. We are therefore respectfully submitting these suggestions to you for your consideration and we will greatly appreciate any action you may take with reference to modifying the regulations as suggested.

Very truly yours,
W. G. Green, Chairman
Tulsa, Oklahoma

Maritime Commission Report

(Continued from Page 9)

In many cases they understated the facts. And they did this not without reason. The members of the Commission wanted to be certain that when final hearings are held on this subject and when the shipping experts are called no one will be able to successfully challenge the conclusions. If facts and figures are paraded in detail before the members of Congress considering shipping legislation then the Commission's findings will be more than subsantiated.

The report is a rich field for a reporter. It is difficult to select the phases of the question to consider. For instance an entire article could be written on the most important matter of comparative depreciations.

But when the writer had finished his article again he would find that the finger points to the plane because the flying boat is depreciated on a 5 year basis and the fleet can be "rotated," that is, a few planes can be regularly introduced, keeping the quality of the fleet up. But a $50,000,000 superliner is depreciated on a 20 year basis for the simple reason it would not be financially sound to "wipe it off" in a shorter period.

What does this mean, you ask? You should guess the conclusion of this reasoning. The superliner must be used for years after it has gone out of date, after it has seen its regular passenger list turn to newer vessels. The flying boat on the other hand is "wiped off" in about 5 years and replaced with the superior equipment. And it should not be forgotten that we will always have superior equipment "soon available." Aviation will become a dull business when a newer and better plane isn't over the horizon at the factory, when pilots and

traffic men will cease to sit down together and start off, "You wouldn't believe it, but I saw it on the ground and in the air. And it goes like a streak of greased lightning. What a ship."

Again turning to costs and keeping in mind that the pound, the franc or the dollar is the most important item, let us look at the man hours of crew required for a passenger crossing. In the superliner it is 73.7 figured on the basis of a crew of 1,340 on a 2,000 passenger boat. But in a flying boat of a "future" design which now is "ready" only 3 man hours of crew are required. This is figured on the basis of a crew of 24 men in a flying boat carrying 150 passengers. The answer of course is found in the difference in speed. A passenger on a one night passage in a flying boat requires only a fraction of the service required on a longer crossing by superliner.

Transportation history teaches us that it is extremely rare that the faster passenger service proves to be the cheapest in its early stages. Yet obviously it is true here. We can only deduce that the potential is unknown.

Concluding then this first article the writer wishes to directly quote Mr. Kennedy's report and in quoting it I believe that every one who believes in aviation could well afford to memorize and to have ready for quotation to those who doubt these few words which are so well written:

"While it may well be said that the figures are perhaps optimistic, nevertheless it appears to be a fact that what is optimistic today in aviation is rapidly met by later developments."

Reunion in Miami

(Continued from Page 10)

in the same split second of Rudy Kling and Frank Haines, on the opening day, December 3, at the start of the Silva Trophy Race, and cut heavy into the ranks of our racing pilots, now dwindled to a mere handful of men and ships. As air racing continues to take its steady toll year after year, so grows the belief that it isn't worth the sacrifice, this racing business, at least under the circumstances and present practices. Maybe we've passed the era of "backyard" designs. Maybe it's no longer a game for the boys who can't afford engineering counsel. Or maybe a new crop will show up next year with the same blood coursing through their veins as that of the old timers who have gone on before them. Remember how we all thought that Michel Detroyat's sweeping the field in the 1936 Nationals would spur us on to new glory around the pylons? But two years will soon pass since then and still nothing but flimsy home made crates inviting death go streaking around the course.

KLING and Haines went in under bad air conditions. Perhaps the scattering pylon was not far enough away from take-off in the gusty air, but that did not seem to be a deterrent to Steve Wittman, who piloted the only other racing airplane in the event. It was more than coincidence both men went down almost simultaneously. Both slipped in the banking turn and concensus of opinion had it that making the 180 degree turn at the first pylon, the two ships fell off for lack of speed while in a vertical position. One report, by a pilot in the race, said something came off Rudy's ship as he went into the turn and Frank caught the prop-wash and followed him in. Wittman, left to a field of A. T. C. jobs, won easily at 243.84 mph. The two fatalities were the first in the 10 year history of the Miami meets.

The A. T. C. races, lacking in appeal to the average show-goer, were interesting from the standpoint of those who know their airplanes. However, so much depends upon the experience of the men at the controls, and little practical good comes from stock model races because of the varied types and power plants. Seen for the first time by many folk were the new Menasco Rearwin Speedster, which showed up well in the stock model races, the Model N three-wheeler Waco, on its first flight into the southland, and Walter Beech's twin engined Model 18.

Our impression was that Miami citizens fell down on the job this year in regard to paid admissions. There were too many vacant spots in the grand stands. Never has there been as hard working a group of men than those who foster and promote the most colorful gathering of aviation folk in the United States every year in Miami, namely R. V. Waters and his committees. They get the industry into Miami and they put on a bang-up show. Genuine hospitality is coupled with keen, personal interest to see that all of us enjoy every moment on and off the airport. Yet the citizens of Miami apparently fail to realize the thousands upon thousands of dollars worth of publicity and advertising—the kind you can't buy—that is theirs as a natural result of the All American Air Maneuvers. Perhaps Steadham Acker over in Birmingham has the right idea anent these civic aviation meets, as his air carnivals are free to the public and local business firms sponsor the events. We don't know, but it seems a shame that Miami folk aren't behind the Maneuvers more whole-heartedly.

IN the same vein of constructive criticism, may we remark that this year we actually appreciated Jack Story's announcing—because Jack wasn't there and the boys they had on the mike did a mighty lousy job of it. One of them tried to emulate the Great Story, but his "Oh-h-h-h-h Me-e-e-e-e!" dripped off the speakers with a sickening thud, and the cows in the south pasture, we bet, are still giving milk.

Is there a man with soul so dead who makes Miami once a year and won't admit that the memorable times are really had on or near Biscayne Bay? Those annual pilgrimages to Pan American's excellent base on Dinner Key are always inspiring, and to wander about those work-horse Clippers in the South American trade is thought provoking. Those nights spent over food and drink in spots that are as famous as any Odd McIntyre can publicize and where the gang gathers to test their melodic pipes under stimulation of Casey Jones' paderewskian fingers. And then those brilliant social events, the Costigan Ball at the Miami Biltmore Country Club, the Arsenicker Ball at the Royal Palm and the annual Aviation Ball at the Biltmore, which this year turned out to be a really nice party (which nobody seems to be able to account for). It was not the usual mob scene but a well behaved group of dignified aviation folk who actually had a lot of fun. It is one place where Gene Vidal and Charlie Horner seem to enjoy the presence of bad boy Caldwell, and pilots you thought ordinarily would resemble Bull Montana, actually look swell in dinner jackets.

From our own selfish standpoint, we hope that Miami will always have us down, because it seems that every year the Maneuvers get better and better, plus the fact that it makes us mighty proud the South can produce a big league air show.

Ports of Call

Correspondence from the Airports and Airways

Birmingham, Alabama

Aerial Santa Claus Opens Christmas Season
New Southern Air Routes Before Congress
Birmingham Airport to Have New Runway

During November of each year every small boy and girl in Birmingham begins to look forward to the arrival of Santa Claus at the municipal airport. On the morning of November 13 this year the mythical old man from toyland came gliding in for a landing amidst the cheers of hundreds of excited kids that had been anxiously watching the sky for the appearance of his little plane. Taxiing to the line just below the crowd old Santa alighted from his plane, his bag bulging with stick candy, but no toys.

He mounted his throne on a large truck awaiting him. In the midst of a dozen Christmas trees decorated profusely, a band immediately struck up the music while the truck moved off toward the crowd. At this instant the kids could no longer restrain themselves and broke through the ropes and police lines in their wild glee to surround Santa's truck on which were thousands of pieces of stick candy. As the truck began moving across the airport Santa began to scatter the candy among the crowd and then proceeded on his journey about the city to the various recreation parks where thousands of other children were waiting.

So in the minds of every child in Birmingham, Santa Claus has gone modern and uses the airplane to reach his destination. And what a thrill they get in visiting the airport each year to watch for the "Old Grey Whiskered Man" appear over the far horizon with his little plane and drop down swiftly in front of them with the season's first good cheer that opens the holiday spirit of the city for another Christmas.

The Alabama Aviation Commission has been advised that two bills providing additional air mail service for Birmingham are in prospect for this special session of congress. If the Kansas City-Memphis-Birmingham-Tampa-Miami route cannot be authorized in its entirety then steps will be taken for the Memphis-Birmingham-Tampa-Miami section. In that event, another route from Knoxville through Chattanooga to Birmingham will also be asked. The length of the Memphis-Miami section is 900 miles and the Knoxville-Birmingham line 235 miles.

The Knoxville-Birmingham line would connect at Knoxville with the American Airlines on the route from New York to Los Angeles via Dallas. At Chattanooga it would connect with Eastern Air Lines on the route from Miami to Louisville and Chicago. At Birmingham the connection would be with the Delta Air Line from Charleston and Atlanta to Dallas. The latter is a part of the southern transcontinental route from New York to Los Angeles.

The Memphis-Birmingham-Miami line would connect at Memphis with the Chicago & Southern Air Line from New Orleans to St. Louis and Chicago as well as the American Airline route which runs through Knoxville.

At a meeting held Tuesday, Nov. 23, final details relating to the construction of the new 3,600 foot runway were agreed on by representatives of the WPA, City of Birmingham, Bureau of Air Commerce and the Aviation Commission. The meeting was attended by Col. Sumpter Smith, chief aeronautical engineer for the WPA; G. H. Bonie, WPA project superintendent; E. M. Owens, assistant city engineer; Steadham Acker, airport manager; S. E. Travis, district adviser for the Bureau of Air Commerce at New Orleans; D. B. McCracken of the 106th Observation Squadron; Hester Smith and Asa Rountree, state aviation director.

Mr. and Mrs. Merritt Craft departed in their Waco Cabin airplane for Philadelphia, Pa., where they spent the Thanksgiving holidays with their daughter Jane, who is attending school there. They will spend several days in New York on business before the return flight home. Steadham Acker, airport manager, left Birmingham November 25 to attend the Air Maneuvers in Miami. Acker has been one of the judges at this meet for the past five years.

Perhaps Georgia Tech failed to beat Alabama's Crimson Tide but they certainly made an outstanding display of air mindedness at Birmingham's Airport. Three special flights by the Delta Air Line carrying thirty passengers and seven chartered and private cabin planes carrying twenty-eight passengers descended on the "Magic City's" airport on the day of the game.

The aviation commission is making plans for its first annual Alabama Aviation Conference, which will be probably be held in January. The conference will provide an open forum for a discussion of Alabama Aviation Conference, which will probably be held in January. be invited.—*EARLE WHEELER.*

Cincinnati, Ohio

Aeronca Caravan Heads for Miami

The All Aeronca Air Caravan left Lunken Airport on Monday, November 29, for Miami, Florida. More than 30 ships left Cincinnati in the main group after a delay of one day due to unusually bad weather.

Fliers from all parts of the United States began to arrive in Cincinnati on Wednesday in preparation for the departure of the cruise. Several of the "fair sex" are participating in the flight. Among these is Irene Crum of Huntington, West Virginia, who holds the International Altitude Record for women. She is flying an Aeronca high wing and with her is Lucile Todd, a lawyer from the same city. The following states are represented in the flight: Iowa, Nebraska, Texas, Indiana, Illinois, Maryland, South Carolina, Ohio, Michigan, New York, Virginia, West Virginia, Kentucky and Toronto, Ontario, Canada.

The caravan carries a small goat that is given each night to the pilot who has had the most tough luck for that day. Doug R. Alexander, who hails originally from Toronto, Canada, and Vern Messerer, of Waterloo, Iowa, were the first two members to carry the goat. The animal is an all-aircraft product as it is made of sitka spruce, has aluminum rivets for eyes and is painted with aircraft dope. He is housed in a small plywood barn. Each day the member who has the goat in his care throws it into the baggage compartment and takes care of it until the next night.

The caravan will be joined in Jacksonville by smaller units from other parts of the South. In Orlando the pilots will be entertained with a party at one of the country clubs of that city. The following day, December 2, they will fly in formation to Miami where they will attend the Air Maneuvers.

Cincinnatians in the caravan are Carl I. Friedlander, vice-president of the Aeronautical Corporation of America, D. L. Reif, Aeronca test engineer, and wife, Robert Koster, Aeronca test pilot, and wife. Laurence Schmidlap, of the Queen City Flying Service, also is attending the Air Maneuvers. Last year he placed second in the Miami-Havana race. Edith Lackner, Cincinnati's leading feminine pilot, is flying her Stinson to Miami this year.—*AL F. DAVIS*

Coffeyville, Kansas

Air Meet Planned for December 12
Inman Brothers Circus Returns Home

After everybody had decided we wouldn't have the annual air show this year, the announcement came out that our 8th Annual Coffeyville Air Meet will be staged as a free show on Sunday, December 12. Several competitive events will be offered with the Inman Brothers, Henry Duncan, and Lynn Berentz acting in the role of hosts and chief entertainers.

The Inman Brothers Flying Circus has returned to winter headquarters here after a barnstorming tour through Kansas, Colorado, Wyoming, Nebraska, South Dakota, Iowa, Missouri and Oklahoma.

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The circus left here May 1 with the 23-passenger Boeing tri-motor and the Ford tri-motor. Approximately 40,000 passengers were carried in the two ships this year with no accidents. Carl Hall, parachute jumper with the circus, made an average of four or five jumps a week. Louise Tinsley, famous woman flyer holding a record for barrel-rolling, accompanied the circus in her Kinner powered Travel-Air through Nebraska and Colorado.

Armistice day found five local planes flying in formation over the city. This stunt has been impossible in the past due to a lack of pilots. However, pilots became as plentiful as grasshoppers during the close of the summer. The group consisted of Ray Jensen in his Waco, "Hank" Duncan" in a Cessna, Don Hindman in an Aeronca, Ernie Blagg in his Robin and Lynn Berentz in an American Eagle.

Seven of Henry Duncan's students recently staged a bomb dropping contest. First place was taken by Ray Jensen, and second prize went to Harley Samuels. Sally Duncan, Dick Elsey, Howard Megrady, Ray Sage and Bill Jensen had to be satisfied with the fact that they had been in the contest. Upon the same day, Howard Scholey soloed the Aeronca and became the fifteenth solo student under Duncan. Five more students are rapidly nearing the solo stage while five advanced students are practically ready for private tests. Duncan has recently sold his dismantled Robin to Beale Robinson of Independence.

Dale Meyers, Arrow Aircraft Corp. sales manager, flew in from Lincoln, Nebraska, to visit friends and relatives. Joe Tipton flew here from Tulsa in an Aeronca C-3 to visit E. W. Tipton. Pat Flannery of Kansas City flew here in his Stinson. An army Douglas B-T brought J. O. Johnson from Randolph Field, Texas. Mr. and Mrs. E. H. McFarland of Pittsburg flew their Stinson here and had Thanksgiving dinner with relatives. McFarland is manager of the Pittsburgh airport. Glen McConnell of Parsons landed his Cub for a short visit recently.—*HAROLD HAGGARD*

Houston, Texas

Barksdale Pilots Provide Show
Carl Wootten Pays a Call

The Third Wing group came up from Barksdale Field and spent two weeks during the past month. Some of the maneuvers, which were presented for the crowd, were precision personified and the spectators enjoyed it a lot. The people of Houston turned out by the hundreds to attend the one day open house provided by the army.

The United Gas Company's new Lockheed is based here now and it is really a beautiful ship. It is painted deep green all over. George H. Echols flew to Atlanta in his new Stinson recently and reported a very enjoyable trip. Dude Camden is flying high and fast in his new Beechcraft and we can't decide who flies the most, he or Butch Stewart. Butch flies the McDermott Stinson and is on the go most of the time. Air Activities have their new four place Warner powered Fairchild 24 and they report a lot of interest in this ship. Mr. Hooper has put over 50 hours on his new Fairchild 45 in less than two months and is more enthusiastic about the possibilities of aviation in the oil business than ever before. Gene Meador has just returned from a two weeks combined pleasure and business tour of the state in his custom Waco.

Carl Wootten, sales manager for the Taylor Young Airplane Co., was in Houston a short time ago visiting all the boys and looking the territory over. Carl started down in one of the new Taylorcraft Deluxe jobs but got weathered in at Memphis and had to come on in by air line and train.—*CLYDE FOREMAN*

Johnson City, Tennessee

McKellar Tri-City Airport Opened

Upper East Tennessee, a rugged area which was formerly a danger spot on the aviation map because of its inadequate airport facilities, opened its new 192 acre airport on November 5. The new port, named McKellar Tri-City Airport in honor of U. S. Senator Kenneth D. McKellar, cost over $1,000,000.

Before the opening of the new field, airport facilities in the Upper East Tennessee area were limited to a small field near Bristol, Virginia, and small emergency fields near both Johnson City and Kingsport, Tennessee. Bristol, Virginia, is located just across the tate line from Tennessee.

In 1934 a citizens committee, from Johnson City, Kingsport and Bristol, Tennessee, began a movement to build an adequate airport for the region. The three cities are located in a triangle about twenty to thirty miles from each other. The new field is in Sullivan County and is sixteen miles from Bristol, fourteen miles from Johnson City and Kingsport.

The cost of the airport was borne by the three cities, Sullivan County

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and the WPA. The cities and the county cooperated in purchasing the site of the port and contributing $50,000. The balance of the cost was paid by WPA, the total outlay amounting to $1,050,136.

The site of the airport covers 323 acres. Because of the rugged terrain it was necessary to excavate 1,334,306 cubic yards of soil in leveling the field. It is 1,520 feet above sea level. Two large bituminous surfaced runways are located on the field. The east-west runway is 3,584 feet in length while the north-south runway is 3,150 feet in length. In addition there are two bituminous surfaced taxi strips each 1,000 feet long. Forty-eight boundary lights mark the field at night.

A large hangar and administration building have been constructed. The hangar is 120 x 125 feet and will accommodate twenty private or five commercial transport planes. The hangar also includes a repair shop. Louis Hilbert is manager of the airport. The Inter-City Air Service is operating the hangar and a flying school at the field.

American Airlines is making daily stops at McKellar field on its trips to the Southwest and to New York.—*AUGUST BRUNSMAN*

Joplin, Missouri

American Airlines Tests Local Port Solos on Increase

An American Airlines transport with a full crew recently landed on the newly reconditioned airport and pronounced it satisfactory. It is expected that scheduled stops will begin immediately.
ticularly to Kansas City and St. Louis. Dr. Moody was among those who made an emergency trip this month.

W. M. Smith, from Rolla, recently had his Stinson overhauled at the Harper repair shop and then re-licensed. Don Mayes ship was also granted a license by Inspector Burns.

Soloists this month on the Cub were Raymond Tedrow, Mr. Bruton, Wilbur Baldridge and Onnetta Winifry.

Pete Galardo has become a permanent night watchman at the repair shop and hangar.—*HELEN HARPER*

Lafayette, Louisiana

New Hangar Completed

W. M. Hutchins, Department of Commerce inspector from New Orleans, spent a day at the airport recently conducting examinations for pilots licenses and inspecting aircraft. Those taking the examinations were Mike Safer, Glynn Miller, B. C. Dickerson of Baton Rouge, Leo Gro, and Mrs. Fanny Leonpacher. E. L. Harris and David Thomas had their ships re-licensed.

Paul D. Hosier is back to winter here at the airport. J. L. Schroeder, Jr., E. B. Gaither and B. J. Longino, Jr., passed through here from Texas where they have been dusting cotton. The boys said they had their white linens cleaned and pressed and were heading for Miami to enjoy the Florida sunshine. Dude Camden is the first pilot to park his Beechcraft in our new hangar. Donald Kemper of Opelousa paid us a visit this week and flew the Aeronca to Patterson and return.—*MRS. P. V. HUTCHINSON*

Little Rock, Arkansas

National Guard Dedicates New Hangar Taylor Assembly Plant at Memphis Airport Improvements Underway

Under the auspices of the Arkansas National Guard, fifteen army planes and a number of local air people entered in a dedication program of the new national guard hangar. The boys are all set for the winter. They boast of nine 0-38 observation planes and the prospect of some new 0-47 ships by the first of the year.

The city is WPAing a new hangar. It is now under construction and will be possibly be finished by spring. An addition of fifty acres of land has been purchased and an extension of the north and south runway will be made. A new east and west runway is being constructed.

Lowelle Yerkex, with Transportes Aeros Centro-Americanos, Ltd., of Tegucigalpa, Honduras, C. A., was a visitor here in search of various material.

King's Flying Service, dealer for Taylor Cub and Rearwin for this state, has a very nice student business. They have added quite a few new members to the Dawn Patrol Flying Club.

Jim Kukla, district sales manager for the Taylor Aircraft Corp., and J. P. Carpenter, bookkeeper for Southern Air Service of Memphis, Tenn., dropped in for a chat at the King's Flying Service office recently. They told us all about the new Taylor assembly plant that is to be erected in Memphis. We think they have got something there.

J. C. "Speck" Tankersley is still operating his Fairchild for charter work and blind flying instruction. S. A. Franklin, airport manager, is quite proud of his Rearwin as the inspector has just put a new license plate on it. A. W. Sheppard is still flying his Monocoupe "Blossom." "Shep" says he only lacks a few Oxydol soap wrappers before he will have enough to get a new one. We are very interested in Bill Stoger, local boy, who has built and flies a Corben Super Ace. Earl "Buster" Murphey passed his transport examination this week. Congratulations, "Buster," we think you are tops and a low ceiling can't stop you. We still have to use the beacons and boundary lights to an excess as Red King, Less Cabiness and Weldon Farish can't find the way home after a night of cruising.—*TRIXIE CHANEY*

Miami, Florida

Highlights On the Air Maneuvers Tree Planted as Memorial to Amelia

As this is written, race preparations are at high tide on Miami's Municipal Airport. This year marks the Tenth anniversary for the All American Air Maneuvers and sets a world's record for Miami in consecutive air race events.

Closed course events will be for both "C" licensed and Free-For-All entrants. The "C" licensed 200 cubic inch race for light airplanes promises to be the real blood race of the meet. Entries for this event promise to be so numerous that two elimination events are planned and the final contest will be run off the last day of the meet. Results will be interesting. Among the special events will be the revived slow race. It has been many years since any of us have seen a race of this type and with the advent of present day practically non-stallable ships this race should show some interesting results.

Immediately following the Miami meet, the Second Annual Miami-Havana Air Cruise will take place. Competing ships will leave Miami for Havana via Key West on Monday, the 6th, and will be the guests of the City of Havana and the Republic of Cuba for six full days. There will be one day of racing while in Havana and the entire trip should be long remembered by all participants.

The Coral Gables Chamber of Commerce officiated at a tree planting at the municipal airport in commemoration of the start of Amelia Earhart's last flight from the United States, which was from Miami. The tree, a Royal Poiciana, will be an everlasting tribute to the beautiful memory of Amelia.

Seasonal aviation activities in Miami will be well under way with

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For Sale: STINSON model S. In excellent condition. 200 hrs. since overhaul. Streamline pants, Grimes landing lights, new battery. 76 gal fuel. $1650. Also J-5 motor. Charles Theis, 628 E. Douglas, Wichita, Kansas.

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1-C 103-2"	65"	belt—navy blue, ea.	2.25
1-C 103-2"	65"	belt—light blue, ea.	2.25
5-C 103-2"	40"	belt—red, each	1.80

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We have the following parts in stock in quantities listed.

WRIGHT J-5

1-Crankcase front section, 1-Crankcase front section cover, 2-Crankcase intermediate sections with tappets, 1-Crankcase main section, 3-Crankcase rear sections, 2-Crankshafts, 14-Cylinders, 63-Cylinder Rocker box studs, 54-Cylinder hold down nuts, 31-Rocker box tension springs, 50 Rocker box covers, 24-Intake pipe packing nuts, 47-Valve tappets and guides, 24-Push rods with ball ends, 51 Rocker arms, 49 Articulated rods, 3-Master rods complete, 5-213HB Thrust bearings, 11-SRB 2K4 Main ball bearings, 72-Outer valve springs, 89-Intermediate valve springs, 89 Inner valbe springs, 9-Rocker am support pins, 10-Link knuckle pins, 78-Lower valve spring washers, 82-Upper valve spring washers, 5-Pistons, 2-Oil pumps, 3-Cams complete, 27-Exhaust valves, 5-Master rod bearings, 2-Main bearing bronze bushings.

WRIGHT J-6

2-Crankcase rear sections, 3-Crankcase nose sections, 2-Crankcase main bearings, 3-Diffuser sections, 2-Crankshafts complete, 3-Cam drive gears, 2-Crankshaft gears, 3-Starter generator drive gears, 3-Accessory drive gears, 2-Impeller drive gears, 2-Impeller drive gear shaft support, 1-Impeller shaft, 1-Supercharger impeller, 2-Accessory drive shafts, 3-Oil pump bevel gears, 2-Idler accessory drive gears, 2-Oil pump assemblys, 2-Impeller clutch springs, 2-Tach and fuel drive shafts, 3-Cams each 5-7-9, 1-Nose plate cover, 13-Intake pipes, 17-New style rocker box covers, 9-Old style rocker box covers, 2-Carb. elbows, 21-Push rods, 17-Intake pipe packing nuts, 1-5 cylinder master rod, 2-9 cylinder master rod, 22-Rocker arms, 21-Rocker arm bearings, 26-Knuckle pins, 2-Thrust bearing adj. nuts, 26-Valve spring assemblys complete, 37-Valve spring washers lower, 35-Valve spring washers upper, 30-Cam followers, old type.

PRATT & WHITNEY WASP

2-Push rods, 26-Push rod housings, 1-Main crankcase, 1-Crankshaft, 1-Master rod, 29-Valves.

LYCOMING

1-245 hp. crankcase rear section, 1-210 hp. crankcase rear section, 1-Crankcase nose section, 1-Thrust bearing cover, 2-Oil strainer cases, 1-Crankcase, 5-Push rods, 2-Connecting rods, 7-Intake packing nuts, 26-Lower valve spring washers, 8-Upper valve spring washers, 13-Rocker arm bearing plugs, 1-Cam ring old type, 1-Cam ring new type, 6-Intake manifolds, 12-Pistons, 18-Rocker arms, 11-Rocker arm shafts, 1-Distributor head, 13-Rocker box covers.

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FAIRCHILD "24" Ranger powered 36 model. This ship has always had the best of care and is in excellent condition. A real bargain for cash. Write for details.

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FORT WORTH, TEXAS

Ports of Call

(Continued from Page 23)

the start of the Air Maneuvers and many of the contesting and visiting pilots will remain to enjoy the winter here. We hope all of our readers will be able to spend at least part of the season with us.—*KARL VOELTER*

Oklahoma City, Oklahoma

Sid Maxfield Moves to Municipal Airport
Jerry Sass Buys New Wasp Stinson
Southwest Aviation Sales Buys Taylorcraft

A recent addition to the municipal airport is the J. Sidney Maxfield Company, distributor for Stinson airplanes. One Stinson has been fitted for ambulance and special charter service. A Fairchild KR-21 is being used for student instruction and acrobatics. This ship is quite popular and is in the air a great deal of the time.

Carl Winstead still gets up at two o'clock every morning and flies to 17,000 feet to see what the weather is like. He has been operating a Cessna from the local port for two years and has sold several new Cessna airplanes. Among his customers is Marquad Huckins, who recently took delivery on a new C-37 and seems very well pleased with it.

The sheriff's Waco is about ready for another bandit hunt since it has been in the repair shop for a thorough checking over. Clint Johnson and Stanley Rogers shouldn't have any trouble getting their man when this is done.

Jerry Sass took delivery on a new 450 hp Wasp Stinson from Sid Maxfield on November 26. The airplane is a fine looking ship and Jerry is well pleased with it.

Southwest Aviation has been very busy the past two months and Norman Blake has been hollering for help to clean up some of his repair work. However, he seems to be in a good mood now and is wading out with good success. Haskell Shaw recently added a Taylorcraft to the company and is doing a nice business in student instruction. He also has the dealership for the airplane in and around Oklahoma City. Students are waking him up at night to find out when they can fly the next morning.

Bob Allen, pilot for Jack Schafer, has been pushing the Stinson around the country a lot lately. Roy Hunt is up to his old tricks again. He has been giving the Sunday crowds a big show of stunt flying when he isn't flying the Electra for the Fain Drilling Company. Roy says, "I wish I had a Great Lakes." L. T. Dutcher has taken a job at the airport so guess he will have to quit flying until vacation time. Air traffic through here has been very heavy for the past three or four months and it looks like we will have to build another hangar to take care of the visitors. An air show is being planned for Sunday, December 5, on the local airport.—*PAUL BLACK*

San Antonio, Texas

Texas Aviation Sales Buys New Arrow
Hangar Six Signs Up New Students

Merlin Fischer, long connected with the United Aero Corporation, is now flying a V8 powered Arrow Sport for the Texas Aviation Sales. Eddie Smith and Lewis Sanders are the local representatives for this ship.

From Hangar Six comes a report of an increase in student flying. Among new students are Conrad and Marie Banspach, O. B. Charles, J. J. Fritz, Charles Holliday, Ann Russ, Leo Toudouze and Frank Uhr. Julian Myers is now chief instructor for the school. Department of Commerce Inspector Clark awarded a private license to Robert Nuckols.

Adrian Hines, who has been down on Madagoda Island for several months, has brought his Aeronca to this field for the winter. Since duck season has opened on the coast there are too many bird shot flying around according to Hines. Les Bowman, who flies for Booth Henning, dropped in for a short visit. He was flying a Ryan ST.—*GREG MOORE*

Wichita, Kansas

Light Plane Sales Growing
Harte Opens New Office
Osborne Announces New Service
Morris Brooker Moves to Ponca City

Wichita is fast attaining a reputation as a sales center for light airplanes as well as for the manufacture of a group of internationally known airplane models. Morris Alford is one of the newest to enter the light plane field here but within a period of three months he has sold a total of five new Taylorcrafts. Alford devotes his full time to traveling over the state of Kansas promoting the distribution of airplanes for the Taylor Young Aircraft Company. He is concentrating at the present time on the promotion of flying clubs in various cities.

Bill Vacin is still operating two Aeronca K airplanes for student instruction and has a sales representative constantly working territory on Aeronca sales.

The Harte Flying Service has opened an office in the administration building which is in charge of Clinton Day. Day operates the office to promote sales, charter flying and student work. In addition to this he is in charge of photographic work. A downtown building has been rented in which overhaul and repair work is carried out and at present two airplanes are being rebuilt. The company is state distributor for the Cub airplane.

In the hangar on the east side of the field, a new organization which will specialize in engine and airplane overhaul and service has been formed by Stanley Osborne. The company will also deal in used airplanes and parts.

Max Walton is making plans to devote considerable more time to sales of the Arrow Sport during the coming year. He recently sold his used automobile business here.

Morris Brooker left here recently to make his headquarters at Ponca City. He has been operating a Stinson on short haul passenger flying and charter service for the past two years in Wichita. It is reported that he will take the distributorship for the Luscombe line in Oklahoma and concentrate on the new Model "50."

The Cessna Airchcraft Company recently delivered a C-37 airplane to Don Hayes, president of the Pittsburgh Aerial Surveys Company. This is the seventeenth airplane that Cessnas has sold in the past fourteen months to be used for photographic service.

Mr. St. John, sales representative of the Piper Aircraft Corp., came into Wichita recently flying a new Cub. Before he left, however, the airplane was sold to Raymond Gile, a student at the Harte Flying Service. St. John made his trip on south by other means.

Billie Carpenter, of Hugoton, came in for the night recently. He expects to move to Great Bend early next year and continue his work of student instruction and the sale of Cub airplanes.

Harry Heimple recently passed his tests for a private pilots license and has purchased a used Waco airplane from the Beech Aircraft Corporation. Jimmie Wright successfully passed the requirements for a transport ticket. Jack Lapham, of San Antonio, landed his Stinson here recently and spent three days on business. Bill Ong flew a Beechcraft here from Kansas City accompanied by two passengers. He stayed here for a few hours and then returned home. The Ethyl Gasoline Corporation Beechcraft stopped at the Beech Aircraft Corp. for several days recently while undergoing a general checking over.—*ALANSON RAWDON*

One of Our Simple Problems

"Design a plane," the head men say,
It must be built in such a way,
That the dumbest mug can fly hands off,
Make the hardest landings still feel soft,
Make up for brains that the pilot lacks,
Make the seats lean forward and still lean back.
Supply and demand will be the thing,
Forget the span of chord and wing.
The spar must just be six feet long,
For scraps of spruce cost but a song.
The fuselage can be tied with string.
Or by a similar method hung to the wing.
It must be safe and in the main,
Be able to withstand a hurricane.
It must be fast and not land hot,
(What a HELLUVA job the designer's got!)
Fast and light and comfortable too,
With a cruising range to Timbuctoo.
Of course this is no common hack,
For it must carry the load of a ten ton Mack.
It must climb straight up and land straight down,
But the pilot must scarcely feel the ground.
Yes, flaps and brakes and retracting gear,
Hells Bells! They must think the millenium's here.
And one last word the head men say,
"It's gotta be finished by YESTERDAY!"
On second thought there's one thing more,
They'll have to sell at the ten cent store.

—By A. F. Davis.

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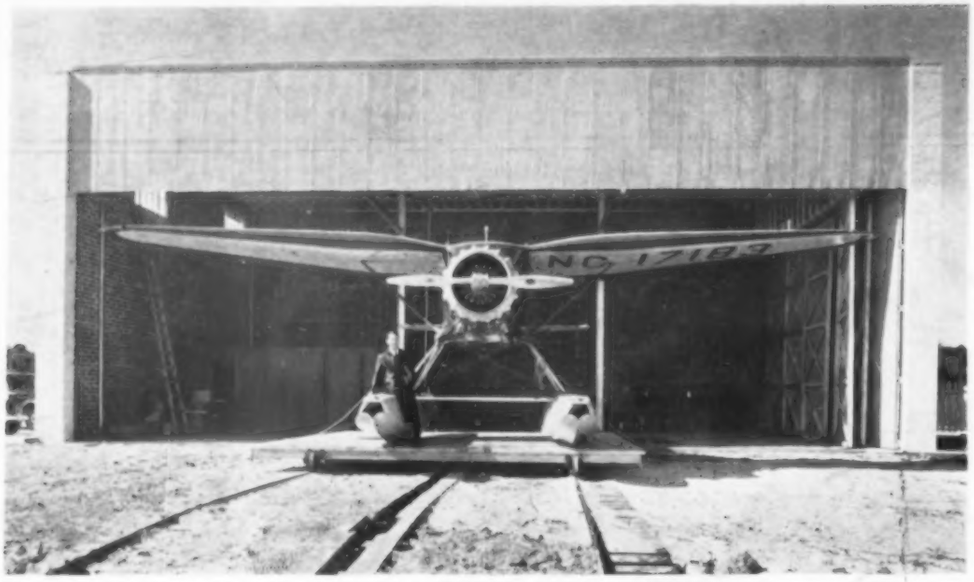

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